THE ROAD TRANSPORT SYSTEM IN ROMANIA IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT. NEWS, PERSPECTIVES AND SUSTENABILITY

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Abstract: *The paper presents concrete research, in which exact, up-to-date data and figures are reported about the road transport system in Romania, over which a systematic analysis of the main elements that define and constitute its foundation was made: the infrastructure and the national fleet of vehicles. As for the road infrastructure, those interested can find out data on the stage of development and the length of highways in our country, data on the structure, density/1.000 km^2 of the territory, and the dynamics of the mobility index of the other categories of roads existing in Romania on this date. Regarding the national fleet of vehicles, those interested can find out data on its evolution and stage of development in the last ten years, the situation of registrations of road vehicles by category at a national level, the situation of registrations per quarter during the period January 2019 - December 2021, the distribution of road vehicles according to the fuel used for propulsion, the distribution according to the age of the road vehicle fleet, the degree of motorization (the number of vehicles/1.000 inhabitants) and the number of registrations of second-hand vehicles versus new vehicles registered for each county of the country. Further, readers can also learn about how the Romanian authorities ensure the sustainability of this sector, through the National Recovery and Resilience Plan. Finally, the conclusions and subsequent directions of research and development are presented. The scientific work was carried out with the purpose of implementing some technical and managerial concepts, which bring added value and contribute to the sustainable development of motor vehicle transports, based on the study and analysis of the current data researched by the authors from the documents elaborated, edited or approved by the European Union and the Romanian authorities.*

Keywords: *sustainable, development, sustainability, road transport infrastructure, national car park, reform, investements.*

Introduction

investments
"Sustainable transport is a complex system designed to ensure mobility needs for current generations, without damaging environmental and health factors". (WCDE, 1986)

The author (Basgan, 2003) shows that, in order to make energy and material consumption more efficient, it must make it possible to meet in optimal conditions, from an economic-ecological-social perspective, the need for mobility for future generations. It is the essence of the movement in the daily lives of European citizens, being the main way in which it "facilitates their access to social activities and services" (Basgan, 2003), (Pop, 2002), (Zamfir & Zamfir, 1995).

Analyzing very carefully the road transport system in Romania, we can easily see that, after the revolution of 1989, there was a so-called, *easy adaptation to the market*, noting, contrary to some measures stipulated in the White Paper, a tendency of strong growth of the road transport (of goods and passengers) and respectively an unequal evolution of the other transport systems. If we look at them in their own image, they started from a lower level than what was required then. The transport operators at that time, mostly with the state capital, had an outdated, physically and morally worn transport vehicle park made up mainly of domestic vehicles. The road infrastructure at a national level was poorly developed and unmodernized (the 60s), and the transport legislation was not aligned to European requirements.

Based on these starting points, we can say that road transport was one of the first areas in which there was a rapid change from a form of communist property, state property, to private, capitalist property. Road transport was a sector that developed more quickly and chaotically, compared to railway transport in Romania. Currently, road transport at the national and European levels is still on the rise.

We consider that the road transport guidelines and policy practiced today in the European Union are leading to the further development of this type of transport within all the countries which have joined or are about to join the Schengen area, placing particular emphasis on the development and modernization of the road infrastructure and the national fleet of motor vehicles, an infrastructure that will be covered in the future by modern means of transport.

According to the National Start for Sustainable Development of Romania (*Horizons 2013-2020-2030*), it is envisaged "to promote a transport system in Romania, which will facilitate the safe, fast and efficient movement of people and goods at the national and international level, in accordance with European standards" (Romania & Development, 2008, p. 47)

Method used and results obtained

Research objectives:
Studies and research on the development stage of the road infrastructure in Romania on December 31, 2022;
Studies and research on the development stage of the national road vehicle park in Romania on December 31, 2022;
Studies and research on the sustainability status of the road transport system in Romania on December 31, 2022;

Research hypotheses:
The road infrastructure in Romania is deficient;
The national road vehicle fleet is aging;

The Romanian Government supports the road transport system through measures that will be applied in the medium and long term.

Research tools used: bibliographic research; consultation of websites of the European and Romanian public institutions, analysis, comparison and exposure;

Respondents/studied corpus: the road transport system in Romania (infrastructure and national road vehicle fleet);

Arguments:
In Romania, after the Revolution of 1989, the road transport system developed rapidly, compared to the railway transport system;
In Romania, the road infrastructure is largely constituted on the structure of the roads built at the level of the '50s-'60s, it is poorly developed, having communication ways that cross the main localities, produces congestion and delays of the road vehicles in traffic, creates stress and distrust among users;
In Romania, the national road fleet is aging, consisting mainly of second-hand vehicles from the West, physically and morally worn out, which predict uncertainty in operation, endanger the safety of goods and the safety of passengers;
The measures taken by the Romanian Government in the short, medium and long term, through the National Recovery and Resilience Plan (NRRP), will contribute to the sustainable and durable development of the road transport system.

The period of time during which the study was conducted: January 2019 - December 2022.

How the data were collected: studies and bibliographical research on the documents elaborated by the European Union and Romania authorities.

Word, Excel, and Adobe Photoshop are software programs used for data processing.

Road transport infrastructure

As regards the network of motorways and expressways at a national level, critically analyzing this aspect, we specify that before December 1989, 113 km of the motorway were built, and between December 1989 and 2007, the last being the year when Romania entered the European Union, being a transitional period, only 148 km were inaugurated, Romania reached a total of 261 km. During 2008 - 2017, our country accessed European funds and managed to inaugurate 487 km, reaching a total of 748 km.

At the end of 2018, the national highway network reached the figure of 823 kilometers built. Given this number, only 101 km were built in 2018, but only 60 km were used. On May 31, 2022, 961 km of the highway are being built and used in Romania.
We agree with the authors who claim that "Romania is on this date, on the last place at the European level in terms of the number of kilometers of highway built per 100,000 inhabitants" (Ministry of Internal Affairs, 2021, p. 33) .

According to a 2019 Economic Forum Report, Romania ranks 119th out of 141 countries analyzed regarding road infrastructure quality. (World Economic Forum, 2019, p. 479).

Figure 1 shows the situation of motorways at the national level on May 31, 2022, which also includes motorways and open expressways, which are currently in the execution stage.

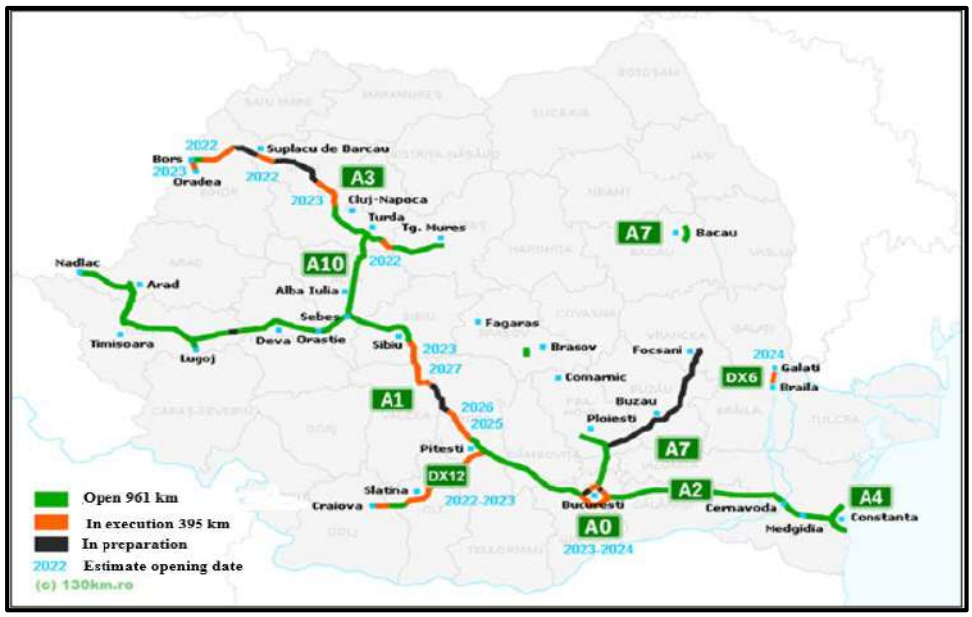

Figure 1. The situation of national higways at May 31, 2022 (km.ro, 2022)

Given the data made available by the National Institute of Statistics (INS), Table 1 shows the statistical data on the total length (km), by category, of the existing roads in Romania on December 31, 2019, respectively December 31, 2020.

Table 1 Total lenght (km), by categories, of roads existing in Romania on December 31, 2019, respectively December 31, 2020 (INS, 2021, p. 1)

Road categories	31.12. 2019			31.12. 2020		
	National roads	**County roads**	**Communal roads**	**National roads**	**County roads**	**Communal roads**
Modernized roads	16.991	14.840	6.335	17.091	15.232	6.866
Roads with light clothing	720	13.227	7.418	659	13.370	7622
Paved roads	144	5.310	12.377	145	4.802	12.105
Earth roads	18	1.706	7.305	18	1.681	7.200

Analyzing these data, we claim that as of December 31, 2020, the length of public roads totaled 86,791 km, of which 17,913 km (20.6%) national roads, 35,085 km (40.4%) county roads, and 33,793 km (39.0%) communal roads. Regarding the density of roads per 1,000 km2 (INS, 2021, p. 1) of the national territory, we show in Table 2 its evolution compared to 1990.

Table 2. Road density per 1000 km² of the national territory (Ministry of Internal Affairs, 2021, p. 32)

	1990 (%)	**2010 (%)**	**2011 (%)**	**2019 (%)**	**2020 (%)**
Road density per 1.000 km² of territory	30,5	34,6	35,1	36,2	36,4

Given the data presented, we hereby state that the density of roads per 1,000 km² of the territory has permanently increased, but not enough. This indicator managed to increase in 2020, compared to 1990, only by 5.9%.

Infrastructure is quite deficient between regions, especially industrial or commercial centers, and road traffic transiting villages, communes, and cities create major traffic jams. Our point of view in this regard is that the acute lack of high-speed infrastructure at the national level negatively influences the mobility index of goods and the population.

The SARS-CoV-2 pandemic of 2021 and 2022 further reduced this index. The density of the public road network per 1,000 km² territory in 2020 is 36.4 km.

If the public road network expanded, compared to 2010, by 5.34%, the mobility index (Table 3), calculated as millions of vehicles x kilometers traveled, experienced a continuous and sharp increase, so that in 2019 it had a value of 140%, much higher compared to 2010. The most spectacular increases, year by year, were recorded in 2017 (an increase of 21.5%) and 2018 (an increase of 23.7%) (Ministry of Internal Affairs, 2021, p. 33) .

Table 3. Dynamics of the road mobility index and its evolution in the period 2010 - 2020 (Ministry of Internal Affairs, 2021, p. 33)

Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Mobility index*	73.2511	74.5133	80.8533	85.6887	90.5444	96.2884	104.6122	127.1333	157.2522	175.4277	146.9211

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Annual evolution (%)	0	+1,7	+8,5	+6,0	+5,7	+6,3	+8,7	+21,5	+23,7	+11,6	-16,3

***** Expressed in millions of vehicles x kilometers traveled.

Given the analysis carried out, compared to 2019, in the context of the mobility restrictions imposed by the SARS-CoV-2 pandemic, the road mobility index in Romania in 2020 decreased by 16.3% (from 175,427 million vehicles x kilometers traveled in 2019, to 146,921 million vehicles x kilometers traveled in 2020). (Ministry of Internal Affairs, 2021, p. 34).

National motor vehicle fleet

According to the data studied for 2021, on December 31, 2020, "Romania had an impressive fleet of road vehicles that reached the figure of 9.222,280 units" (Ministry of Internal Affairs, 2021, p. 25) . To all this, we also add the registrations of road vehicles from 2021, "which have reached the number of 649,284 units". (INS, 2022, p. 1).

The analysis showed that, as of December 31, 2021, our country owned a total number of registered road vehicles of **9.871,564**. Table 4 shows the registrations of new road vehicles, by category, at a national level, in 2020 and 2021.

Table 4. Situation of road vehicles registrations new, by categories, at a national level, in 2020 and 2021 (INS, 2022, p. 1)

-units-

Road vehicle category	2020				2021			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
I. Road vehicles for passenger transport	**138996**	**98279**	**134258**	**152262**	**125042**	**130485**	**151275**	**126711**

Road vehicle category	2020				2021			
	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**	**Quarter 1**	**Quarter 2**	**Quarter 3**	**Quarter 4**
- of wich: new vehicles	**290433**	**22769**	**36965**	**441933**	**21975**	**28938**	**42860**	**34385**
Mopeds and motorcycles	2386	3021	4519	4234	2529	4500	4682	2747
- of wich: new vehicles	877	1027	1684	2234	1040	1795	2118	1278
Passenger cars	1360559	95039	129192	1475225	122057	125514	146148	123565
- of wich: new vehicles	279804	21634	34985	417304	20761	26939	40564	32946
Buses and minibuses	551	219	547	503	456	471	445	399
- of wich: new vehicles	186	108	296	229	174	204	178	161

Road vehicle category	2020				2021			
	Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**	**Quarter 1**	**Quarter 2**	**Quarter 3**	**Quarter 4**
II. Road vehicles for the transport of goods	**27251**	**22600**	**28877**	**30270**	**30458**	**31126**	**29081**	**25106**
- of wich: **new vehicles**	**8744**	**7550**	**9963**	**10313**	**10475**	**12956**	**11993**	**10303**
Trucks*	15978	13585	15346	17361	16271	16347	15636	13878
- of wich: new vehicles	4018	3580	3923	4596	3952	5178	5148	4561
Road tractors	3084	1693	2889	2965	3854	3609	2945	2807
- of wich: new vehicles	822	433	677	725	963	1238	900	1103
Trailers and semi-trailers	8189	7322	10642	9944	10333	11170	10500	8421

Road vehicle category	2020				2021			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
- of wich: new vehicles	39 04	35 37	53 63	49 92	55 60	65 40	59 45	46 39

*Special purpose road vehicles are included.

If we analyze the evolution of the trend of vehicle registrations from 2010 to 2020, we see that it was an increasing one (fig. 2).

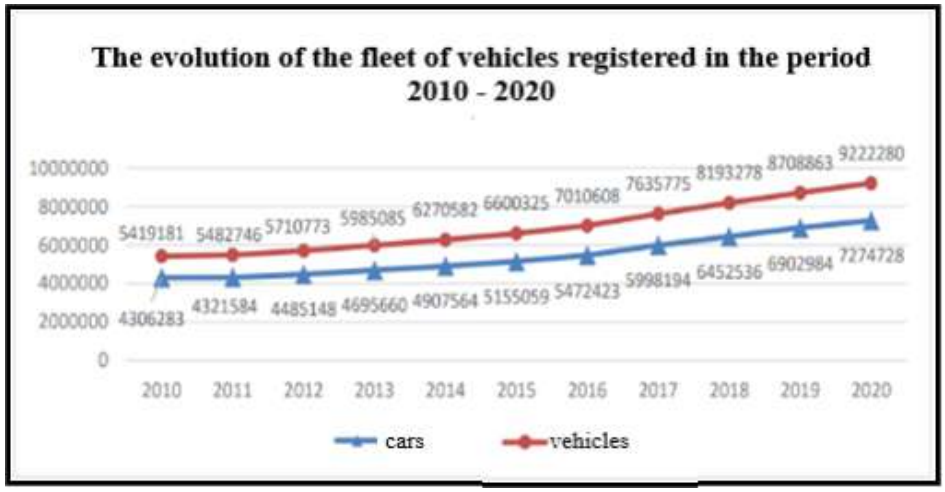

Figure 2. The evolution of the fleet of vehicles registred in period 2010 – 2020 (Ministry of Internal Affairs, 2021, p. 26).

2020 was a pandemic year, with restrictions, which the Romanian population faced besides health problems and financial problems. "At the end of 2020, Romania had 7.274,728 motor vehicles in its own park, of which 79% are cars." In 2020, (Ministry of Internal Affairs, 2021, p. 25) Romania recorded low sales of new motor vehicles, among the lowest in the E.U. Given the specialists' calculations, it appears that the share was 6.5 new motor vehicles per thousand inhabitants, which proves that we were almost on the last place in their ranking of them, ahead of Bulgaria which obtained a score of only 3.2 new motor vehicles per thousand inhabitants.

The last ten years illustrate a continuous increase in both the number of motor vehicles and vehicles in general. "Thus, at the end of 2020, the fleet of motor vehicles was 2.968,445 units larger (+68.9%) than at the end of 2010, and overall, at the end of 2020, the fleet of registered vehicles was 3.803,099 higher (+70.2%) compared to 2010" (Ministry of Internal Affairs, 2021, p. 25)

Based on the data shown in Table 4, we analyzed and found that the purchasing power of the population was high, with a total of 169,540 new road vehicles being purchased in 2020 and 173,885 new units in 2021. Between 2012 and 2017, the growth of the national road vehicle fleet was more pronounced, but after 2018, a slower growth followed. The justification for this aspect also results from the analysis of Figure 3, where we show the registration of road vehicles at a national level, by quarters.

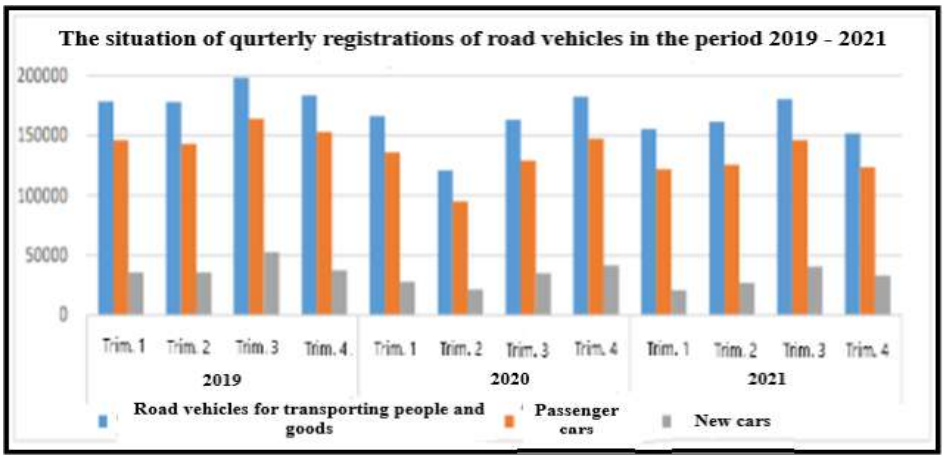

Figure 3. The situation of quarterly registrations of road vehicles in the period 2019 – 2021 (INS, 2022, p. 2)

Analyzing in terms of the distribution of motorized vehicles according to the fuel used at the end of 2020, (Table 5), we find that the number of diesel vehicles is higher than the one on petrol. The share is 53.8% of the total motorized vehicles. The high percentage is also determined by a large number of heavy-duty vehicles and diesel-powered trucks, but also by the attraction and appetite of the population for Diesel motor vehicles.

Table 5. Distribution of motor vehicles depending on the fuel used (Ministry of Internal Affairs, 2021, p. 26)

Fuel type	Number of vehicles (units)	Percentage of total motor vehicles
Gasoline	3.964.192	45,6%
Diesel	4.681.218	53,8%
Electric	6.407	0,1%
Hybrid	45.240	0,5%

Gasoline vehicles "have a share of 45.6%, and electric vehicles have a small share of only 0.1%". (Ministry of Internal Affairs, 2021, p. 26)

"They are fewer than hybrid ones that have a share of 0.5% of the total national fleet of vehicles" (Ministry of Internal Affairs, 2021, p. 26).

Here we see ecological vehicles' unattractiveness and the Romanian population's reluctance toward them. In this regard, it seems that our country has set targets and drafted a law through the Ministry of Economy, Energy and Business Environment, Romania's Energy Strategy 2020-2030, with the perspective of 2050, in which it provides that at the level of 2050 green vehicles will have a share of up to 60% of the total national park. Specialists appreciate that the gradual adaptation to electromobility will be made from 2030.

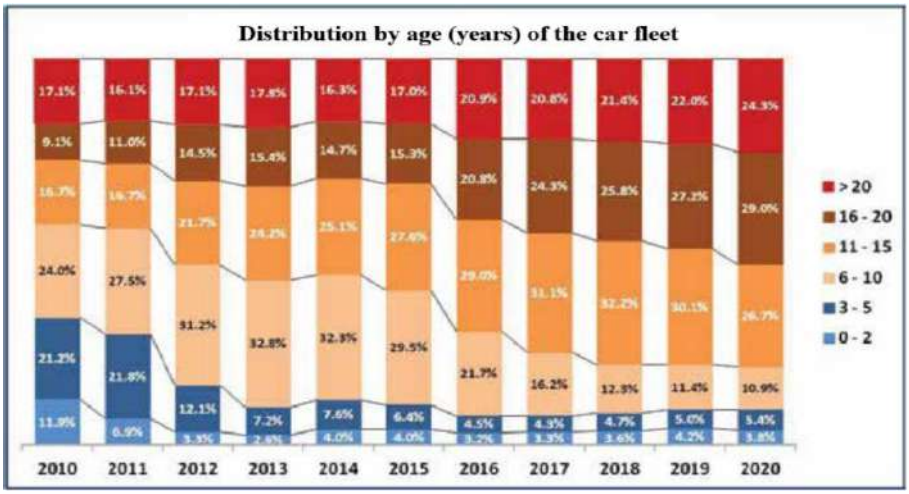

Figure 4. Distribution by age (years) of the car fleet (Ministry of Internal Affairs, 2021, p. 27)

"Of the 6,407 electric vehicles, 5,803 are electric motor vehicles, 223 electric motorcycles, 212 electric goods transport vehicles, 159 electric buses and minibusses, 7 electric mopeds and 3 electric vehicles for special purposes. " (Ministry of Internal Affairs, 2021, p. 26). Figure 4 shows the age distribution of the national fleet of motor vehicles.

Analyzing the age of the fleet of motor vehicles in Figure 4 and the data from Table 6, we state that at this time Romania has the oldest fleet of vehicles in the European Union. Its average age "is 15.9 years, compared to the end of 2020". (Ministry of Internal Affairs, 2021, p. 27).

We are at the bottom of the ranking on this issue "along with countries like Estonia and Lithuania". (Ministry of Internal Affairs, 2021, p. 27)".

Regarding the registrations of new motor vehicles, our country is 16th out of 27, at the level of the European Union. Compared to what exists in our country from this point of view (Ministry of Internal Affairs, 2021), the European Automobile Manufacturers

Association specifies "At the opposite pole, newer fleets of motor vehicles are found in Luxembourg (average age of 6.5 years) and Austria (average age of 8.3 years)".

Table 6. Distribution of cars from the national parks by age (years) (Ministry of Internal Affairs, 2021, p. 26).

Seniority (years)	Numbers of cars (units)	Weight (%)
0 - 2	277.676	3,8
3 - 5	391.785	5,4
6 - 10	793.042	10,9
11 - 15	1.938.806	26,7
16 - 20	2.107.040	29
> 20	1.766.397	24,3

The age of the motor vehicle fleet in Romania "has been accentuated from one year to another". (Ministry of Internal Affairs, 2021, p. 27)".

Also (the Ministry of Internal Affairs, 2021, p. 27) shows that: if in 2010, a percentage of 43% of the motor vehicle park was represented by motor vehicles with an age over 11 years, in 2020 we are in the situation that 80% of the motor vehicles are older than 11 years. The city of Bucharest has the youngest motor vehicle park (with an average age of 12.2 years), at the opposite pole being Mehedinți County, with an average age of 17.5 years.

According to sources provided by APIA (Agency for Payments and Intervention in Agriculture), cited by (the Ministry of Internal Affairs, 2021, p. 28) , the Road Safety Bulletin 2020, at the end of 2020, (Figure 5), included 376 motor vehicles per 1,000 inhabitants, Bucharest having the most motor vehicles per 1000 inhabitants (656) along with Timiş (406), Constanţa (406), Arad (402) counties, and at the opposite pole, Vaslui (240), Călăraşi (243) and Botoşani (252) counties are characterized by the lowest motorization rates in the country.

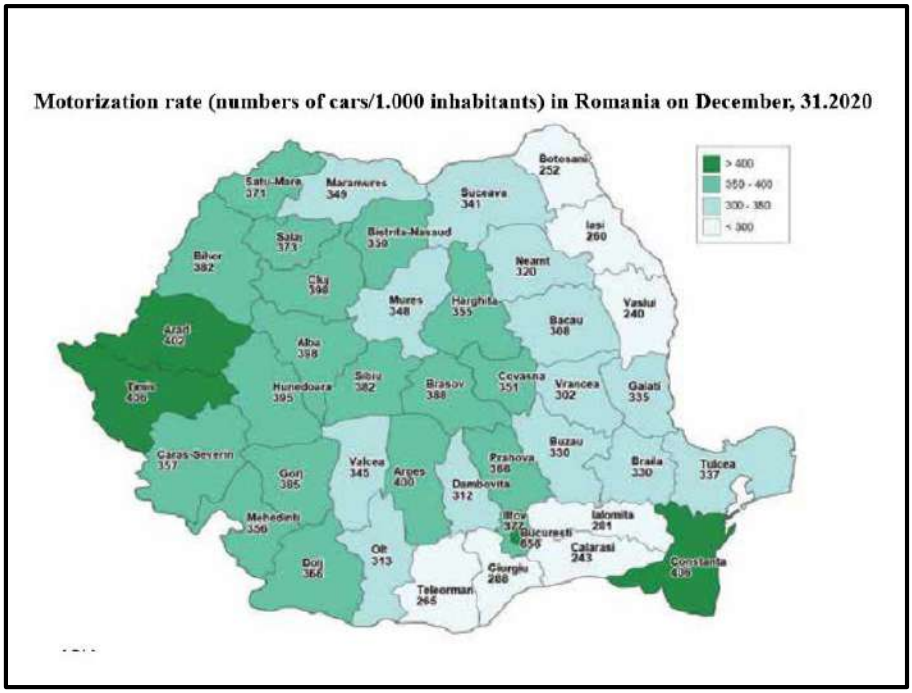

Figure 5. The motorization rate (number of cars/1.000 inhabitants) in Romania on December 31. 2020 (Ministry of Internal Affairs, 2021, p. 28)

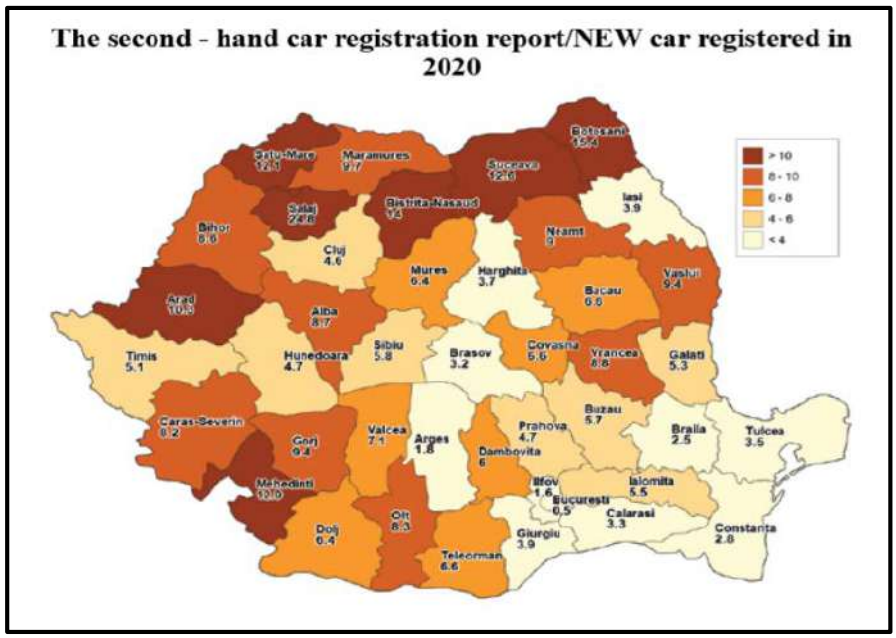

Figure 6. The second–hand registration report/new car registered in 2020 (Ministry of Internal Affairs, 2021, p. 29).

Analyzing the data shown in Figure 6 shows that in 2020, almost 30% of the total number of motor vehicles registered in Romania were new. The others are old, rolled-up cars brought from the west by the population.

The aging of the national fleet of vehicles was also noticed by the specialists of the Romanian Automotive Registry, on the occasion of periodical technical services within the ITP stations, or along the way.

The same (Ministry of Internal Affairs, 2021, p. 30) states that: of the 64,096 vehicles technically controlled in traffic in 2020, 35.3% were non-compliant regarding road safety.

Sustainability of road transport in Romania

The proposed objective is to increase the sustainability of all national transport systems by supporting the transition to electromobility and digitalization, through the development of a sustainable and environmentally friendly transport infrastructure, which will also contribute to the completion of the 'Trans-European Transport Networks (TEN-T)', (European Commission, 2022), resulting in the deagglomeration of urban nodes.

Table 7 shows the main reforms that Romania has proposed, as well as the financial funds necessary for developing the road transport system, through NRRP.

Table 7. Reforms established by the objective of developing the road transport system within PNRR (National Recovery and Resilience Plan, 2021, p. C4)

Reforms	Allocated budget (mil. euros)	Milestones/Targets
R1. Sustainable transport, decarbonisation and road safety.		1. Entry into force of the law for implementing a new charging system based on distance traveled for heavy goods vehicles and higher property taxes for the most polluting passenger vehicles.
		2. Entry into force of the law to electromobility for individuals and legal entities.
		3. New clean vehicles purchased by public bodies, at least 3% above the thresholds of Directive (EU) 2019/1161 of the European Parliament and of the Council of 20 June 2019 amending Directive 2009/33 / EC, in the period 2021-2025.
		4. Disposal of 250.000 polluting vehicles (Euro 3) between 2022 and 2026.

Reforms	Allocated budget (mil. euros)	Milestones/Targets
	10	5. Increasing the number of zero-emission vehicles by 2026 (29,500 units).
		6. Charging stations for electric vehicles (52 stations will have 264 charging points by 2026).
		7. Adopt the national road safety strategy.
		8. Entry into force of road safety legislation.
		9. Installed and functional equipment to improve compliance with speed limits and road safety regulations.
		10. Reducing the number of road accident.
R2. High – performance management for quality transport.	19	1. The entry into force of Law no. 50/2021 for the approval of Government Emergency Ordinance no. 55/regarding reorganizing some road management companies.

The latest report at the European Union level on the state of road transport infrastructure (European Transport and Infrastructure Board) in 2019, shows that "our country is the worst in this chapter, ranking it in last place, with a score of 2.96" (Romania T. G.-P., 2022, p. 18).

Table 8 shows the main investments that Romania has proposed, as well as the financial funds necessary for developing the road transport system, through NRRP.

Table 8. Investments established by the objective of developing the road transport system within PNRR [(National Recovery and Resilience Plan, 2021, p. C4)

Investment	Allocated budget (mil. euros)	Milestones/Targets
I1. Development of sustainable road infrastructure related to the TEN-T network, tolling, traffic	3.095	1. Signing of contracts for 100% of works regarding the environmental impact.
		2. Entry into force of the law to encourage the use of clean vehicles.
		3. New clean vehicles purchased by public bodies, at least 3% above the thresholds of Directive (EU) 2019/1161.

Investment	Allocated budget (mil. euros)	Milestones/Targets
management, and road safety.		
		4. Construction of new roads, 50% of the work completed.
		5. Construction of newly completed roads (TEN-T standards).
		6. Elimination of black spots / hotspots on road safety. The 267 road safety hotspots / hotspots in 2021 will be reduced by 129.

According to the data specified by the Romanian Government, both the reforms and the investments will be made in reciprocity with:
"Climate policies at the European level" (Commission, 2021);
"European Green Pact" (Commission, 2021);
"The European Union plan climate targets for 2030" (Commission, 2014);
"European strategy on sustainable and smart mobility" (Commission, 2020).

Conclusions

Despite all the efforts undertaken by the authorities in our country in the last 30 years, to modernize and restore the domestic transport systems, according to the previously analyzed data, it turns out that a large part of the public road network is in a mediocre or completely damaged state, insufficiently prepared to take over and cope with a high flow of vehicles.

At a national level, we have an outdated and aging fleet of vehicles, whose means of transport have advanced physical and moral wear and tear, have technical failures that endanger the lives and health of people and road users, and road safety is faulty.

"In 2020, for a new motor vehicle, two used motor vehicles were registered". (Ministry of Internal Affairs, 2021, p. 8). Due to these reasons, Romanian authorities, by their position in making decisions, must take into account and adopt new development strategies in this area to integrate the road transport system in Romania to the EU's requirements.

We argue that such a strategy consists in creating sustainable road structures, so that the road transport system in our country becomes more efficient, and safer, with a reduced economic, environmental, and social impact. Romanian Road transport can be considered sustainable only in such a conjuncture.

We believe that our country will have to invest considerable financial resources in developing the infrastructure and the fleet of existing road vehicles, because they are far behind compared to other European countries.

According to the estimates made by specialists in the Investment Plan for the Development of Transport Infrastructure for the period 2020 - 2030, our country needs at this time of day a budget of 70 billion EUR, exclusively to build and bring the road infrastructure to the standards required by the European Union. Romania, through the National Recovery and Resilience Plan (NRRP), has set itself as an objective of supporting all transport systems and has allocated through this plan the amount of EUR 7,620 million, which will cover only a part of the necessary investments in this field at a national level, not including VAT in this amount.

The degree of congestion and blockage of urban and interurban road traffic, and noise pollution in Romania, corroborated with the discomfort created by the vibrations produced by heavy vehicles, increases stress and reduces the efficiency of the population's work. The modification of the urban architecture, but also the occupation, and the monopolization of the public space is added to all this in a negative sense. All hypotheses formulated by the authors are confirmed.

The subsequent research directions can focus on achieving the technical and engineering targets specific to the road transport activity, through which the system has the capability to protect and remedy the damages produced to the ecosystems within which it evolves, in order to efficiently and effectively use the material, financial, human and natural resources, and finally to cover all the important human tasks and needs such as: satisfaction and comfort, health, safety and the provision of jobs for mankind.

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