

SUSTAINABLE DEVELOPMENT OF ROAD TRANSPORT IN ROMANIA, IN THE CONTEXT OF ACCESSION TO THE SCHENGEN AREA

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Abstract: The academic paper describes the actual investigation the authors conducted to put into practice a few ideas of a technical and administrative nature, in which the technical aspects of the policies in the field of road transport are presented. In this way, those interested can learn about the current state of road transport in the Schengen area, but also about some legislative aspects that regulate this field. Although Romania did its homework very well for the joining the Schengen region, in December 2022 Austria opposed the non-EU membership of Bulgaria and our nation. This aspect brings major damage to the Romanian road transport industry, generating substantial indirect losses defined by the reduction of foreign investments and limited exports, the increase in environmental pollution with chemical and noise pollution from goods transport vehicles that stand for tens of hours in huge queues at the points of crossing borders, lost working time for drivers, who become impatient and stressed at the well. Finally, the conclusions in the addressed field are presented.

Keywords: Schengen area, road transport, transport operator, transport market, the Schengen acquis, joining the Schengen region

1 INTRODUCTION

One of the most defining characteristics of the European Union in this abolition of internal border restrictions and the nondiscriminatory treatment of people when they exercise their right to free movement.

Schengen (Council, 2022) represents an EU policy through which the states accepted in this area the abolition of all forms of control at shared borders. The name of the area comes from the Schengen Agreement of June 14. 1985 and the Schengen Convention of June 19. 1990 (EUR-Lex, 2023), which were certified by

signature in a small town in the state of Luxembourg, a town recognized for the production of quality wines bearing the famous Schengen designation, located near the borders France and Germany.

At this time, a number of 26 states are part of this agreement (Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden and Hungary; including non-EU countries: Switzerland, Iceland, Liechtenstein and Norway), and three other small states (Vatican City, San Marino and Monaco), keep their borders free for passenger traffic with their neighbors, in this case, they being considered "de facto" members (from the Latin language "in practice, but not necessarily conditioned by law" or "in practice, but without legal regulation"), resulting in the practical impossibility of to travel from their territory without the transition of at least one member country of the Schengen area. Figure 1 shows the map of the Schengen region's member nations on December 31. 2022.

Currently, the Schengen area covers more than 4 million square kilometers, with 27 countries, with a combined population of approximately 420 million, are included which 23 are European Union states, and from January 1, 2023, Croatia became (Popescu, 2023) the 27th full member country the Schengen region Controls along the internal borders of Bulgaria, Cyprus, and Romania have not yet been removed, and Ireland is not part of the Schengen area. The external border of the Schengen Area measures a length of 50,000 km (approximately 20% land border and 80% maritime borders) comprising hundreds of sea, airport and land border crossing points. Integration in the Schengen Area means obtaining the right for people who want to travel, regardless of the means of transport (Ionescu, 2021).

The result of the accession of a state to the Schengen area is to give up the controls between

the internal borders between the member countries adhere to the Schengen acquis, a single external border being created, where controls are carried out according to a set of well-established rules in matters of visas, migration, asylum, as well as rules relating to police, judicial or customs cooperation. Each member state is periodically evaluated by the European Union to check whether the established norms are respected and applied.

1.1 Objectives:

- Presentation of the conditions that must be met to become a Schengen member;
- The benefits brought to Romanian road transport organizations by joining the Schengen area;
- A study on the adaptability of transport organizations in Romania to the requirements imposed by the EU for accession to the Schengen Area;
- A study on the influence of transport activities on air quality in the most important cities of some Schengen countries;
- A study on how to calculate the reputation of road transport organizations in the Schengen area;
- A study on security at Schengen border crossing points and the losses of road transport organizations in Romania due to our country not joining the Schengen area.

Based on these objectives, the chapters of the current work will be developed.

2 THE CONDITIONS THAT MUST BE MET TO BECOME A SCHENGEN MEMBER AND THE BENEFITS BROUGHT TO ROAD TRANSPORT ORGANIZATIONS IN ROMANIA

Parallel to the beginning of the negotiating process on Chapter 24, "Justice and Internal Affairs," Romania's preparations for joining the Schengen region have begun and are still being

carried out under the direction of the Ministry of Internal Affairs and includes activities for the drafting of strategic documents, (Conf-RO, 2000, pp. 1-62) construction institutional, to implement them, as well as to monitor the commitments assumed. During the preparation activity, several Schengen evaluation visits took place, in all areas respectively: visas, air, land and sea borders, police and judicial cooperation, the Schengen Information System, personal data protection.

The main finding of the Schengen evaluation reports was that Romania has advanced in its adoption of the *acquis* and is prepared to enter the Schengen zone. Expert recommendations for legislative, procedural, and infrastructure changes that our nation was required to undertake by the date of entrance to the Schengen region were included in each evaluation report.

To become a Schengen member, each European state must meet certain conditions in the following areas:

The application of a common set of Schengen rules (European, 1985, p. 177), (European, 1985, p. 183) (compliance with the Schengen *acquis* that refers to the issuance of visas, police cooperation, protection of personal data, control of land, sea and air borders). However, the most recent legislative revision to the Schengen system (the Schengen governance package) enhanced EU oversight to guarantee that Member States apply the Schengen *acquis* in a principled, effective, and objective manner. Defending the principles of the EU Treaty – including the rule of law, democracy and fundamental rights – constitute the preconditions for "deserved or meritorious trust" in the scope of Schengen cooperation;

Assuming management of external borders on behalf of other member nations and issuing standardised Schengen visas;

Effective coordination with other Schengen nations' law enforcement to maintain high levels of cross-border security after controls are lifted;

Connecting and using the Information System dedicated to the Schengen area. The Schengen Information System is an information exchange system for the security and management of European borders.

The benefits of joining the Schengen area for the transport of goods or passengers are as follows:

a) Eliminating long waiting times at EU borders for freight vehicles, thus reducing costs and delays in supply chains.

b) Removing abusive techniques and unjustified waiting times at the control of identity documents (passports) for passengers boarding public transport, offering Romanian and foreign tourists fair, honest and civilized treatment;

c) Prevention of exceeding driving time by drivers of road vehicles transporting goods or passengers. The driving and rest times of drivers of goods or passenger vehicles are well defined by EU regulations. Non-compliance with them due to the long queues of vehicles at the Schengen borders, attract sanctions from the European control authorities, for Romanian drivers;

d) The potential to improve the lack of professional drivers by employing drivers from third EU countries. In this case, their use with maximum efficiency and effectiveness in international runs can be made identical to the practice of road transport organizations in the Schengen area. At this time drivers employed from third countries cannot drive road transport in the EU. These aspects are defined by Schengen visas which are authorizations issued by a member state to travel for a maximum of 90 days within a 180 day period (short stay visa).

3 THE ADAPTABILITY OF ROMANIAN ROAD TRANSPORT TO THE REQUIREMENTS OF ACCESSION TO THE SCHENGEN AREA

In Romania, road transport experienced a strong development after the 1989 revolution, being considered a very dynamic sector from the point of view of their evolution and development. If we were to analyze them by their profile itself, this aspect is due to the fact that they started from a lower stage than the requirements of the moment. The transport operators at that time, most of them with state capital, had unfavorable conditions for normal development (obsolete transport vehicle fleet, physically and morally worn out; the road infrastructure at the national level was poorly developed and not modernized; transport legislation was not aligned to European requirements).

Based on these starting points, it can be said that road transport was one of the first areas in which there was a rapid change from a communist, state form of ownership to a private, capitalist one. Most of the organizations that operated in the field of road transport had private capital (99%) and ISI they carried out the activity in the reality of the market economy in Romania. All Romanian road transport operators had to make special efforts to align themselves in compliance with the requirements and LAW European countries, of international conventions and agreements assumed by our country in the first part of the 90s. They encountered some difficulties in the deployment activity, primarily due to lower exports than imports, a fact that affects quite a lot the tariff for export routes, other causes being the insufficient number of bilateral authorizations for international road transport on certain routes and above all, how to distribute them.

Access to the transport market has been legislatively aligned (Government, 2011), being

implemented further gradually, in order to meet EU requirements. The quality of specific services has improved significantly, and the volume of goods exchanged by Romania with European countries was continuously increasing. The development of the market took place in the field of small transport companies, being directly influenced by the need for production or the type of goods sold. Considering the concerns at the governmental level for the stimulation of small and medium-sized enterprises, but also the experiences of the EU countries, the development of medium-sized transport organizations with the implicit advantages in the stable and balanced progress of the economy was further supported legislatively.

On April 4, 2019, during a mini-plenary in Brussels, the European Parliament approved with a majority of votes the Mobility Package, including the files regarding the application of the Secondment Directive no. 71/1996 in road transport (European, 1996, p. 29), revision of Regulation (EC) no. 561/2006 (European, 2006, p. 214) regarding driving and rest times of drivers and amending Regulation (EC) no. 1071/2009 (European, 2009, pp. 51-71) regarding access to the profession, respectively Regulation (EC) 1072/2009 (European, 2009, pp. 72-87) regarding access to the road freight transport market. Romanian transporters must also take into account the changes made to the transport legislation at the European level.

In terms of driving and rest times, the truck drivers were completely successful. MEPs voted and determined that these rules remain unchanged. They also decided that the drivers, every four weeks, should return to their country of origin, and the fifth week should be a week of rest and relaxation, away from the truck they drive. It was also decided by the euro vote of the deputies to equip all light goods vehicles over 2.5 tons with a digital tachograph. In this way, drivers for this category of vehicles, they will not drive until exhaustion.

MEPs voted in favour of stronger regulations that will promote fair competition in domestic markets with regard to road cabotage. Only three days of cabotage will be permitted, and the vehicle involved must wait 60 hours in the member state where the transport company is registered. MEPs voted that international truck drivers should be paid the same as domestic truck drivers, commencing on the first day of work in another member state, as part of the implementation of the new rules on posted workers in the road sector. An exception to this rule is transport that starts and ends in the driver's country of origin, i.e. round-trip transport.

Truck drivers are the clearer regulations regarding the 45-minute break between crew driving shifts, meaning that it is now clear that the second driver can take a 45-minute break in while the first driver is driving, if not assisting him. It explicitly prohibits rest periods of 45 hours or longer, plus the compensatory periods in the cabin, but also the company's obligation to pay for the driver's accommodation.

New regulations regarding the interruption of rest for boarding/disembarking by train or ship have been addressed, which allows the interruption and weekly rests for these operations, in addition to the normal daily ones, and more explicit regulations of the derogation regarding exceptional situations where the drivers of the means of road transport they are obliged to exceed the maximum driving periods, plus a further derogation of one hour to be able to reach the operational center, in order to carry out the minimum 45 hours rest.

For efficient road transport from a legal point of view, minimum annual fees for vehicles are established, as well as common rules for fees for the use of oversized vehicles.

European legislation also harmonises the weights and maximum dimensions of road vehicles in the network. All these requirements are the subject of the EU's land transport policy which promotes safe, efficient and ecological

mobility. The requirements of the EU legislative policy for road transport therefore ensure the promotion of efficient road transport services for goods and passengers; creating fair conditions for competition; promoting and harmonizing safer and more ecological technical standards; ensuring a degree of fiscal and social harmonization, guaranteeing application with maximum efficiency and without discrimination of road transport rules.

Concerns in this regard have existed since the beginning of the 80s, when remarkable progress was made regarding road transport policy and legislation, in the direction of creating a single European market to which Romania also had access. From that moment, all the measures taken in this field aimed to facilitate the cross-border circulation of goods and services.

4 THE INFLUENCE OF TRANSPORT ACTIVITIES ON AIR QUALITY IN THE MOST IMPORTANT CITIES OF SOME SCHENGEN COUNTRIES

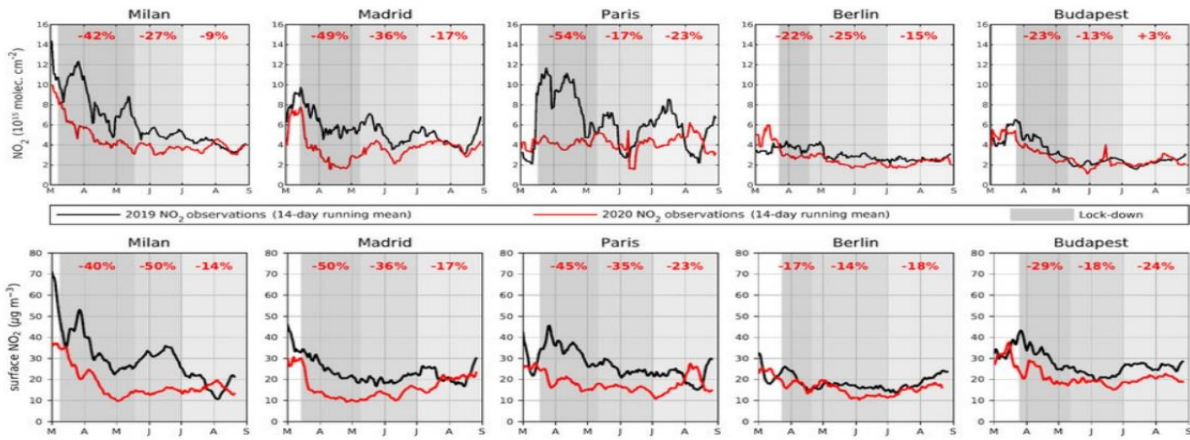
Results, such as temporary decreases in air pollution, have also been observed in parts of China and Europe (for example, during the "lockdown" period in northern Italy). At the European level, ESA (European Space Agency) [14], is the agency that permanently monitors the level of air pollution, especially nitrogen dioxide concentrations through the Copernicus Sentinel-5P satellite. The satellite is equipped with a Tropomi-type measuring instrument that has a high precision measurement capability of the gases in the Earth's atmosphere.

Researchers from the Royal Netherlands Meteorological Institute (KNMI) and The Royal Belgian Institute for Space Aeronomy (BIRA-IASB) used data provided by the Sentinel-5P satellite, but also data provided by meteorological stations located at soil to identify the effects caused by transport activity on the level of air pollution throughout Europe, especially in member states of the Schengen area. Calus

Zehner, ESA's Copernicus Sentinel -5P mission manager, points out that: What is really remarkable is the good agreement between the Sentinel-5P satellite and ground measurements. The results were affected by the health crisis, versus the year 2020, a difficult year, on which the pandemic left its full mark (figure 2). This demonstrates that air quality monitoring from space can contribute to the regular reporting of air quality in European countries, which has so far been done using only ground-based measurements [14]. Thus, they measured air quality defined in this case by the level of average concentrations of nitrogen dioxide at the level of five European states. The comparison was made in 2019, in which the industries and economies of European countries did not function at the projected parameters. On the graphs on the top row, nitrogen dioxide concentrations are plotted using a 14-day moving average. On the graphs in the bottom row, the in situ (on-site) observations are represented. The shades of gray on the graphs reveal the lock-down periods at the level of 2020 (dark grey-strict measures, light grey-free). In red are represented the reductions from 2020 versus 2019 for the same period of the year (March-September).

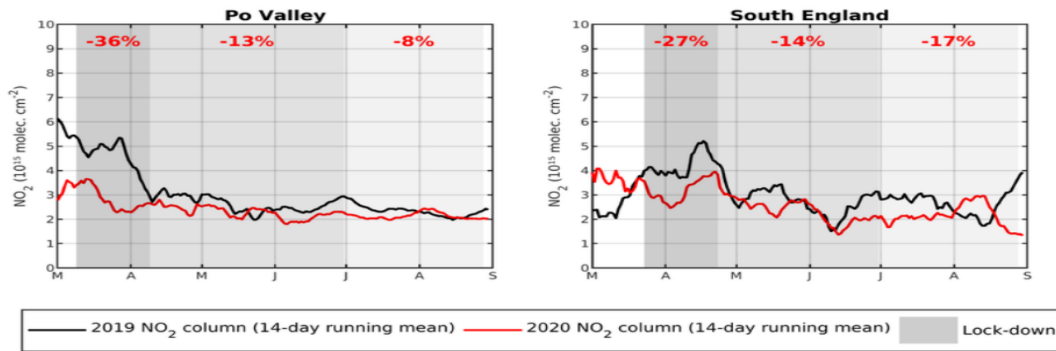
From the interpretation of the graphs, in 2020 there were significant reductions of 40-50% of air pollution with nitrogen dioxide in the first stage of lock-down, at the level of the Schengen countries located in the south of the European continent (France, Spain and Italy). Between July and August 2020, nitrogen dioxide concentrations decreased by 10 to 20% compared to the same period in 2019. Bas Mijling, scientific researcher at the Royal Netherlands Meteorological Institute (KNMI) says that: quarantines implemented in Berlin led to a decrease of around 20%, with little variation observed until August 2020. In Eastern Europe, the impact of the measures was generally less

dramatic than in Southern Europe and France where reductions were observed of around 40-50% during the strict lockdowns of March and April. More research is currently taking place. In this context, and Jeny Stavrakou, researcher at BIRA-IASB (The Royal Belgian Institute for Space Aeronomy), points out that: The impact of meteorology on nitrogen dioxide observations could be significant and should not be overlooked. That is why it is necessary to analyze the data over longer periods of time, in order to better estimate the impact of human activity on the observations. For the 2019 and 2020 monthly average comparison, we estimate an uncertainty about the Covid-19 induced reduction of around 15-20%. Comparing the downscaling of satellite-based and ground-based data for different cities, we find satisfactory differences in agreement that are within the uncertainties due to meteorological variability [14]. March and April saw significant decreases in nitrogen dioxide levels in areas with high population density and high levels of industrialization, such as the Ruhr Region in Germany, figure 3, and the Po Valley in northern Italy, figure 2. The decreases are due to the significant reduction in the activities of the transport systems, especially the road sector, but also the industrial and energy sectors. The graphic analysis shows that, in July and August 2020, in these regions, nitrogen dioxide concentrations returned to normal, with the exception of large cities where restrictions were relaxed. It is worth noting that nitrogen dioxide (NO₂), a combination of nitrogen and oxygen, represents one of the most dangerous polluting substances that form at high temperatures, contributes fully to favoring and forming the greenhouse effect, and its source is the carbon-based fuel burned in automobile internal combustion engines. It causes serious health problems in living beings (pulmonary and cardiovascular diseases).



— Nitrogen dioxide concentrations observed over major European cities

Figure 1. The level of average concentrations of nitrogen dioxide in 2019 compared to 2020 in five cities in the Schengen area (ESA, 2021)



— Nitrogen dioxide concentrations over densely populated and industrialised areas of Europe

Figure 2. The level of average concentrations of nitrogen dioxide from the year 2019, taken compared to 2020 in the Po Valley of northern Italy (ESA, 2021).

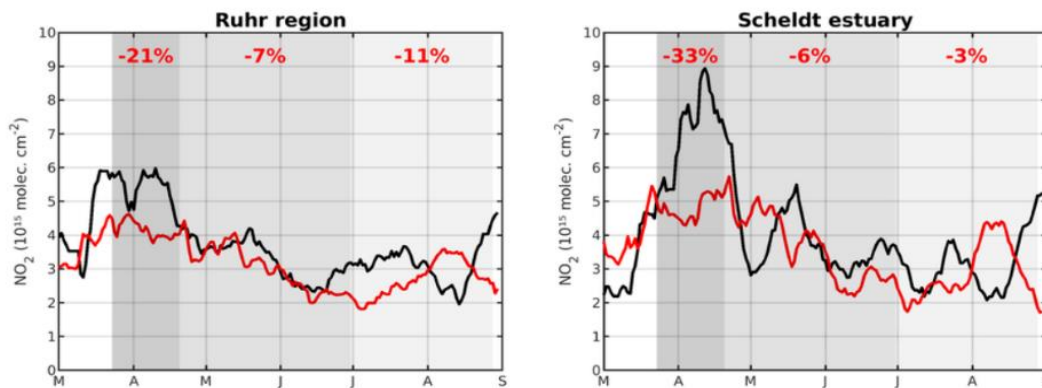


Figure 3. The level of average concentration of nitrogen dioxide from the year 2019, taken compared to 2020 in the Ruhr Region of Germany (ESA, 2021).

5 CALCULATION OF THE REPUTATION OF ROAD TRANSPORT ORGANIZATIONS IN THE SCHENGEN AREA

On May 2, 2022, the document was published which amended the European Union Regulation no. 403 of 2016 (European, 2022, p. 8), regarding serious violations of the European rules that define the loss of good reputation by road transport organizations in the Schengen area.

In this regard, the European Commission provided in the cited document the type and category of serious infractions of European

regulations in the area of commercial road transport, which are divided into three broad categories of dangerousness based on the capacity that generates the risk of physical harm or death to drivers or other parties and/or the manner in which competition on the road transport market is altered.

In tables no. 1, 2 and 3 show the three types of serious violations of EU rules in the Schengen Area for commercial road transport and the determining situations/conditions, where:

CMGI represents the most serious violations;

IFG - very serious violations;

IG - serious violations.

Table 1. Types of serious violations of EU rules in the field of commercial road transport and determining situations/conditions of CMGI (European, 2022).

CMGI - the determining situations/conditions
<ol style="list-style-type: none"> 1. Carriage of passengers without holding a valid Community transport license (no licence, falsified, withdrawn or expired); 2. Improper use of the activity selection function; 3. Falsifying or damaging the data recorded in the transport documents or stored in the tachograph device and/or on the driver's card and/or downloaded from them; 4. The existence on board the vehicle and/or the use of fraudulent equipment that has the ability to modify the records of the tachograph; 5. Driving with a fraudulently obtained driver's card; 6. Driving with a driver's card without being its holder; 7. Driving with a driver's card that has been forged; 8. Lack of approved tachograph device; 9. Exceeding the daily driving period of 9 hours by 50% or more; 10. Exceeding the daily driving period of 10 hours by 50% or more; 11. Exceeding the weekly driving period by 25% or more; 12. Exceeding the total maximum driving time in 2 consecutive weeks by more than 25%.

Table 2. Types of serious infringements of EU rules in the field of commercial road transport and the determining situations/conditions of the IFG (European, 2022).

IFG - determining situations/conditions
<ol style="list-style-type: none"> 1. Lack of control documents for cabotage operations (route sheet for occasional services or the contract concluded between the road transport organization and the transport organizer or a conforming copy thereof in the case of special regular services); 2. Cabotage operations that do not comply with the legislative and administrative acts in force for the host Member State; 3. Cabotage operations in the same Member State within 4 days of the end of the last legal cabotage activity in that Member State; 4. The road freight organization cannot provide clear evidence of previous international transport and/or of each consecutive cabotage operation performed and/or of all operations performed in cases where the vehicle is present in the host Member State during the 4-day period prior to international transport and cannot present this evidence during traffic control; 5. Transport of goods without holding a valid driver's license; 6. The transport organization or the driver cannot present to the control agent a valid Community license or a valid conforming copy of the Community license (the Community license or conforming copy of the Community license is lost or damaged); 7. Transport of goods without holding a Community licence; 8. Possession and/or use of fraudulent equipment capable of falsifying speed limiter data; 9. The speed limiter and the tachograph are not installed in an authorized workshop; 10. Inability to present the driver's card, and the mandatory information is not entered in the road map; 11. The driver does not mark all the necessary information for the periods of time that are no longer recorded when the tachograph is working incorrectly; 12. The driver did not receive instructions that would allow him to comply with the legislation in force with reference to road transport; 13. Fraudulent or incorrect link between remuneration and distance traveled, delivery speed and/or quantity of goods transported; 14. The road transport organization does not organize the activity of the drivers in such a way that they can return to the operational center of the belonging organization or to the respective places of residence of the drivers; 15. Driving period between 10:00 p.m. and 6:00 a.m. more than 3 hours before the break, if the vehicle is not crewed; 16. Exceeding twelve consecutive 24-hour periods after the previous normal weekly rest period; 17. Normal weekly rest period or any weekly rest period exceeding 45 hours taken on board a vehicle; 18. No compensatory rest period for two consecutive reduced weekly rest periods and insufficient weekly rest period of less than 45 h, if the reduced weekly rest period is not allowed; 19. Exceeding the daily driving period of 9 hours if the possibility of extension to 10 hours is not allowed and exceeding the weekly driving period by 10 hours;

IFG - determining situations/conditions
<p>20. Exceeding the maximum total driving time in 2 consecutive weeks and exceeding the uninterrupted driving period of 4 hours and 30 minutes before taking a 6 hour break;</p> <p>21. Insufficient daily rest period of less than 11 hours, if reduced daily rest period is not allowed;</p> <p>22. Insufficient reduced daily rest period of less than 9 hours, if the reduction is allowed;</p> <p>23. Insufficient daily rest period of less than 9 hours for crew driving;</p> <p>24. Using a tachograph without being checked/inspected by an authorized workshop;</p> <p>25. Possession and/or use by the driver of more than one own card;</p> <p>26. Incorrect operation of the tachograph (control, calibration and regulatory sealing);</p> <p>27. Incorrect use of the tachograph (deliberate, voluntary or forced abuse, lack of instructions);</p> <p>28. The body that oversees road transportation does not maintain records of registration forms, printed materials, or downloaded data;</p> <p>29. It will be at least a year before the recorded and stored data are accessible;</p> <p>30. Incorrect use of a driver's licence or a road map;</p> <p>31. Theft of a driver's licence or travel documents, which directly affects the recording of pertinent data;</p> <p>32. Use of the road map or driver card to cover a longer period than the one provided and loss of data;</p> <p>33. Not using manual data entry when this is necessary;</p> <p>34. The use of road maps or a damaged driver's card, with illegible data;</p> <p>35. Incorrect use of travel documents or driver's card when driving in a crew;</p> <p>36. The road transport organization or the driver cannot present a valid Community license or a valid copy of the Community license to the control agent;</p> <p>37. Regular services without valid authorization (authorization missing, forged, withdrawn, expired, misused).</p>

Table 3. Types of serious infringements of EU rules in the field of commercial road transport and the determining situations/conditions of IG (European, 2022).

IG - the determining situations/conditions
<p>1. Driving without holding a mandatory road map;</p> <p>2. The stations within the regular services in a member state do not correspond to the authorization issued;</p> <p>3. The driver cannot present the authorization to the control agent;</p> <p>4. Non-compliance with the minimum age of drivers;</p> <p>5. Exceeding the 10-hour daily driving limit if the extension is allowed;</p> <p>6. Exceeding the weekly driving period by 5 hours;</p> <p>7. Exceeding the uninterrupted driving period of 4 hours and 30 minutes before taking a break;</p>

IG - the determining situations/conditions
<p>8. Decreased weekly rest period of fewer than 24 hours is insufficient;</p> <p>9. Exceeding 6 consecutive periods of 24 hours after the previous weekly rest period;</p> <p>10. The road transport organization does not cover the costs of the driver's accommodation outside the vehicle;</p> <p>11. Weekly rest period taken after 12 consecutive 24-hour periods;</p> <p>12. Incorrect use or non-use of the ferry or railway train sign;</p> <p>13. The records do not show the symbols of the countries whose borders were crossed by the driver during the daily working period;</p> <p>14. The records do not show the symbols of the countries where the driver's daily work period began and ended;</p> <p>15. Inability to present manual records and printed documents of the current day and of the last 28 days (until December 30, 2024);</p> <p>16. Inability to present manual records and printed documents of the current day and of the last 56 days (starting from December 31, 2024);</p> <p>17. The speed limiter does not meet the applicable technical requirements;</p> <p>18. The speed limiter is not mounted in an authorized workshop;</p> <p>19. The driver or the road transport organization cannot present a valid driver's license or a valid copy of the driver's license to the control.</p>

The frequency of occurrences for IG and IFG if they are committed regularly, will be considered more serious by the competent authorities for the Schengen Member States, in whose territory they are found.

A. The following variables are taken into consideration by the responsible road control agencies of the Schengen member states when determining how frequently infractions of the relevant laws occur:

(a) the seriousness of the infringement (IG or IFG);

(b) the time period (which must be at least a year from the date of the most recent control);

(c) the total number of road transport vehicles engaged in the particular operations under the transport manager's management (average achieved in one year).

B. The maximum frequency of IG, considered as a risk for road safety, is calculated with the relations:

$$3 \cdot IG_{CA} = 1 \cdot IFG_{CA} \quad (1)$$

and,

$$3 \cdot IFG_{CA} = LPNSBR \quad (2)$$

where,

IG_{CA} represents a driver's serious violations for a calendar year;

IFG_{CA} - the very serious violations of a driver for a calendar year;

LPNSBR - Launch of the National Procedure for Establishing Good Reputation.

C. The number of violations for a road vehicle for a calendar year are determined with the following relationship (European, 2022)

$$N_{ivr} = N_{IG(IFG)} / N_{mv} \quad (3)$$

where,

N_{ivr} represents the number of violations for a road vehicle;

N_{IG(IFG)} - the total number of serious violations (very serious violations);

No_{mv} - the average number of vehicles used during the year.

The way in which the maximum frequency is determined sets a maximum threshold for the occurrence of IG, above the threshold for considering it more serious. Therefore, each Schengen member state can establish a much higher (stricter) threshold in terms of its own administrative procedures at national level,

when assessing the good reputation of a road transport organization.

The final calculation of the risk level of a road transport organization is based on the following mathematical relationship (European, 2022):

$$R = \left(\frac{\sum_i \frac{n_{i_{MSI}} \times v_{MSI} + n_{i_{VSI}} \times v_{VSI} + n_{i_{SI}} \times v_{SI} + n_{i_{MI}} \times v_{MI}}{N_i}}{r} \right) \times g \quad (4)$$

where,

R represents the overall risk degree of a road transport organization;

n - the number of violations of a certain type/individual control (all types of controls);

and - individual control;

V - weighted score depending on the type/severity of the violation;

MSI - (must serious infringement) extremely serious violation;

VSI - (very serious infringement) very serious violation;

AND - (seriously infringement) serious violation;

mi - (minor infringement) minor violation;

No - the number of vehicles checked during an individual check;

r - the total number of controls for a road transport organization;

g - the weighting of the use of the tachograph based on Chap. II of Regulation (EU) no. 165/2014.

When using the mathematical relationship (4), certain principles or elements are taken into account as follows (European, 2022):

1) The time interval in which a violation is assessed is two years;

2) The classification of operators (road transport organizations) will be done on risk intervals, based on their score, i.e. those who have not been checked (grey interval) = 0 points,

and those with low risk (green interval) = 0-100 points, in those with medium risk (yellow range) = 101-200 points, and in those with high risk (red range) = 201 or more points;

3) The average of the weighted values for the score of the individual controls (*i*) will be calculated by applying certain weighting factors (*v*) in relation to the type of violation, as follows (European, 2022): **MI** = 1; **SI** = 10; **VSI** = 30 and **MSI** = 90;

4) The final risk level of a road transport organization will be established according to "**r**" (the total number of checks made in traffic, at the headquarters or on the occasion of checks in which no violations of European rules were found);

5) *Zero points* will be given to checks in which no deviations or violations of the European legislation in force are found;

6) The value of the weighted score will take into account the total number of controlled vehicles (**N**);

7) The date of the violation that is taken into account in the mathematical relationship is considered the date on which the violation becomes irrevocable, that is, it is no longer subject to review, and violations of the regulation will be taken into account only once;

8) The correction factor "**g**" = 0.9 when, during a check carried out at the headquarters of the transport organization, it is found that the

entire fleet of road vehicles is equipped with intelligent tachographs in accordance with the provisions of Chapter II of Regulation 165/2014/EU (European, 2014, pp. 1-33).

6 SECURITY AT SCHENGEN BORDER CROSSING POINTS AND THE LOSSES OF ROAD TRANSPORT ORGANIZATIONS DUE TO ROMANIA'S NON-ADHERANCE TO THE SCHENGEN AREA

The opposition of the states regarding Romania's accession to Schengen represents direct forms of exerting pressure on the political factors and authorities in Romania, in order to respect the supreme values of the European Union, namely the principles of the rule of law, the independence of justice and democracy, values which, considering that they are respected, they also led to the monitoring of Romania by MCV (Directorate, 2023).

In this sense, it is obvious that, behind all the technical conditions, respectively the more or less sophisticated equipment, there are people who must act and operationalize them.

These people, located in different structures of the state that have to cooperate, at different hierarchical levels, from the lowest level to the highest level, in a real functional network, can be honest or dishonest, and therefore corrupt or not.

Our country is primarily a transit country for the traffic of goods by means of road transport. That is why there is a danger that drugs, migrants or weapons are also transported in addition to or within these carriage methods .

Romania is also considered a country of origin of human trafficking, especially for sexual exploitation (Vreja, 2007, p. 29).

In its 23 years of operation, the Schengen Information System has performed its most crucial duty: regulating the borders of the European Union legally and preserving the

harmony between the interests of national security and respect for human rights.

By storing a new type of biometric data, the development of information and communication technology improves the connection between the services that guarantee the security of European nations (fingerprints, photos for visas and documents) (Inshakova, Kochetkova, & Serbina, 2019, p. 4).

The Schengen Information System made modifications in 2013, making it feasible to integrate services that provide information on aeroplane hijackings, missing items and currency, arrest warrants, residency permits, and methods.

The specialised literature emphasises SIS II's flaws and its inability to adequately respond to challenges despite all these inventive enhancements.

The inclusion of a DNA profile, which serves as a means of identifying missing people in circumstances where dactyloscopic or photographic data are not available or do not meet quality standards, is one of the creative solutions included in a reform project that was approved in Brussels to improve the IT system.

The inclusion of a DNA profile, which serves as a means of identifying missing people in circumstances where dactyloscopic or photographic data are not available or do not meet quality standards, is one of the creative solutions included in a reform project that was approved in Brussels to improve the IT system. All these regulations should be put into practice, including by our country through the development of the National Signaling Information System, a first step being the implementation of the new travel and identity documents with biometric security elements . The implementation of additional data in SIS II, alerts that have the role of intervening in an early stage of the investigation, were proposed.

The warnings' main goal is to stop forced marriages, human trafficking, and other situations where one parent might kidnap their child.

They also aim to protect other vulnerable persons from being denied their freedom of movement.

The inclusion into SIS II of the fingerprints or palm prints of a culprit with no known name that were discovered at the scene of a crime or terrorist act represents another signal of great importance. All Schengen and associated member states will have the obligation to inform EUROPOL in all situations where a person is involved in a terrorist act.

The Schengen area of free movement is currently inoperable due to the restoration of restrictions at the internal borders of the member states in the context of the pandemic crisis brought on by the coronavirus. The European Union seeks to rectify this through the European Commission.

The European Commissioner responsible for internal affairs, Ylva Johansson launched the idea on May 7, 2020 that Romania, Bulgaria and Cyprus join the Schengen area after the crisis triggered by the coronavirus is fully controlled (Ionescu, 2021). According to the European Commission: "the future of Schengen must be marked by the expansion to those EU member states that are not yet part of the Schengen area. This is both a legitimate expectation and a legal

obligation for those countries assessed as ready for accession" (ec.europa.eu, 2021).

In December 2022, Romania and Bulgaria were not accepted to join the Schengen area. This aspect was due to the negative vote given by Austria (opposed our accession to Schengen) and the Netherlands (accepted Romania's accession to Schengen, but without Bulgaria, which then also opposed Romania's disconnection) in the JHA (Council of Justice and European Affairs).

In this context, road transport in Romania, the sector with the largest share of service exports (7.66 billion euros in 2022), is the most affected by Romania's non-adherence to the Schengen area - EU member state since 2007 (UNTRR, 2023). At Romania's borders with the Schengen member states, huge queues (tens of kilometers) are formed of trucks and special vehicles transporting goods or other material goods. This aspect blocks the activity of road transport organizations in Romania, generates a high level of chemical and noise pollution emitted by road transport means, creates a deficit of 25-30% of the drivers' working time which is considered dead time generated as a result of involuntary waiting in queues, affects the supply chains of goods and consumer goods.

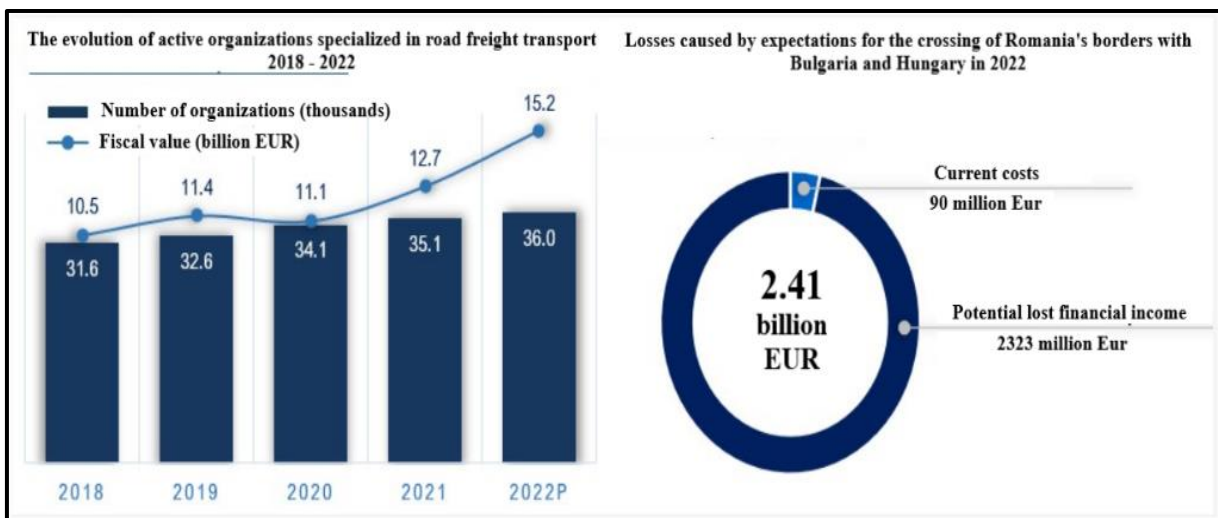


Figure 4. The direct losses of road freight transport organizations in Romania in 2022 (UNTRR, 2023)

All these non-conformities increase the transport costs ultimately borne by consumers and beneficiaries.

The impact of non-adherence to the Schengen area, through the analysis of direct losses (time lost at the borders with Hungary and Bulgaria), for freight transport organizations is as follows (UNTRR, 2023):

In the year 2022, through the 18 access points at the border with Bulgaria and Hungary, 3.9 million goods transport lorries were registered (entries/exits in/out of the country, excluding transit);

- The waiting time at the same border crossing points was in the range [30' - 72 h], with an average of 6 hours/crossing. Under these conditions, the means of transporting goods were forced to stand still for 23.5 million hours/year, generating enormous financial costs; The direct losses of the transport organizations in Romania amounted to the level of the same year at the figure of 2.41 billion euros (potential losses of income and current costs).

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For the road freight transport market, revenue losses represent approximately 15% of the current value of 15.2 billion euros (figure 3).

Following an online survey conducted by UNTRR (National Union of Road Transporters from Romania), it was found that the entire national transport industry is in a dire state. The seriousness lies in the impossibility of applying the obligation to return to the country the means of road transport every 8 weeks, according to the provisions of the Mobility Package 1, in force since 2022. Due to this non-compliance, more than 44% of the road transport organizations in Romania do not have the possibility to bring their trucks home according to the legal provisions, and 30% of them return to the country empty, without cargo, demonstrating inefficiency and

major losses, operating costs increasing in this case between 15% and 20%. Also, 58% of these organizations mentioned that they record waiting times at border crossing points of more than 24 hours, and 41% recorded waiting times of more than 10 hours (UNTRR, 2023).

7 CONCLUSIONS

The contribution derives from the objectives established for this research and consists of the following arguments:

- the structure of the Schengen Area was systematically explained on this date;

- the conditions that a European state must meet in order to join the Schengen Area and the benefits of this membership were presented;

- a study on how Romanian transport organizations have adapted to the requirements of accession;

- it shows how the reputation of Romanian transport organizations is lost if the rules established by the EU in the Schengen area are not respected;

- we presented the state of security at the borders of the Schengen area and the losses of Romanian transport organizations due to non-adherence to the Schengen area.

Accession to the Schengen area is an advantage for goods, consumer goods or passengers regardless of the means of transport chosen: truck, coach, train, plane or personal vehicle. Freedom of movement is increased and goods and capital flow freely. The journey through Europe will no longer be marked by stops at the border, when crossing from one state to another. With a valid passport or identity card, all EU citizens are permitted a three-month tourist stay in another EU member state. Another advantage would be that nationals of one Member State can work and live in another Member State with the right to be treated in the same way as nationals of that country.

The Schengen area's open borders have made the terrorist threat greater, as experience

has demonstrated. Because it is impossible to monitor persons who may be hazardous in a terrorist situation, the method of conducting random checks of citizens who are listed in certain databases uses a lot of resources inefficiently.

Currently, from a legislative point of view, Romania has fully aligned itself with European road transport legislation. The policies carried out by our country in this field completely overlapped with those of the EU. Thus, access to markets and infrastructure was opened and some technical -administrative compatibilities were achieved for vehicles transporting goods and passengers, by eliminating unfair competition.

Indirect losses through non-adherence to the Schengen area bring less foreign investment and lower exports because, foreign investors always look for investment efficiency which is defined by logistics costs and efficiency of material flows.

Membership of the Schengen area would significantly reduce the mismatches between member states regarding Foreign Direct Investments (FDI). For example, due to the fact that Hungary, which is a Schengen member country and has half the territory and population of Romania, has attracted 3.5 times more FDI in the last 20 years, i.e. 7 times more than Romania, which is not in Schengen. This is just one of the advantages of joining Schengen. In this case, through typical calculations of the efficiency made by specialists in this field, it was found that a means of transport of Romanian goods covers a number of 11,000 kilometers per month, compared to a means of transport of a country belonging to the Schengen area, which covers more kilometers in a month (13,000 km). Calculated as a percentage, the efficiency is lower by 18% in the case of Romanian carriers, compared to Schengen carriers.

The calculation of the reputation of road transport organizations in the Schengen area is a tool by which the European road control

authorities maintain discipline control, increase safety and security in road transport, remove shortcomings in the system by increasing the quality index that contributes to a lasting and sustainable development of this sector. By joining the Schengen area, the environmental impact is greatly reduced by reducing the parking of trucks whose engines run idle and implicitly pollute unnecessarily, without thus increasing productive-economic actions. In this sense, in the main border points of Romania Nădlac, Borș, Giurgiu and Calafat, where an impressive number of trucks/day/direction (approx. 1,000 units) are transported, it is estimated that pollution with chemical noxes will decrease significantly because, the truck fleets of Romanian transporters that travel on international routes have an average age of 6 years (they all have engines with emissions that fall within the European Euro 6 pollution standard).

Our country's accession to the Schengen area creates a major social impact that falls between 20% and 30% of the working hours earned by Romanian drivers. There are no more delays in the delivery of goods and consumer goods to customers, no longer are the logistic chains of factories and enterprises affected, the supply of cities with food, clothing and foodstuffs, with fuels and lubricants is no longer affected. All these aspects are no longer reflected in the cost of transport which is ultimately paid by the final consumer. Also, during the parking, the drivers encountered social problems consisting of delays and absence from families, lack of sanitary facilities, lack of public food locations and fuel stations, lack of rest, modification of the driving schedule which is fined by the authorities traffic control. By joining the Schengen Area, all these non-conformities disappear completely. Due to these problems, the stress created by waiting in queues (at least one working day for an external race, sometimes reaching a historical maximum of five days of waiting), in Romania the

profession of professional driver became unattractive, an aspect that creates a major deficit among this occupational category (many Romanian drivers migrate to foreign Schengen road carriers). With the accession to the Schengen area, these inadvertences also disappear.

Schengen membership no longer creates difficulties in the use of non-resident drivers in relations within the EU because road transport organizations in Romania can use this professional category in international routes, as countries that have joined Schengen do (according to European legislation in force, drivers employed by professional organizations in Romania can work in the European Union for more than 90 days in an interval of 180 days). Romania will no longer be one of the states affected from this point of view and will no longer face a crisis of skilled labor in road transport (at this date it is represented by a deficit of 71,000 positions of professional drivers, which was registered at the end of 2022). By joining the Schengen area, non-EU drivers no longer need to apply for a visa to travel within the EU.

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