IRG-rail

Independent
Regulators' Group - Rail

12th Annual
Market Monitoring Working Document

March 2024

IRG-rail

Independent
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List of country abbreviations and regulatory bodies

Country	Country abbreviation	Participating regulatory bodies
Austria	AT	Schienen-Control GmbH
Belgium	BE	Regulatory Body for Railway Transport and for Brussels Airport Operations
Bulgaria	BG	Railway Administration Executive Agency
Czech Republic	CZ	Transport Infrastructure Access Authority *(as of 2022)*
Croatia	HR	HAKOM
Denmark	DK	Jernbanenaevnet
Estonia	EE	Estonian Competition Authority
Finland	FI	Finnish Rail Regulatory Body
France	FR	Autorité de Régulation des Transports
Germany	DE	Bundesnetzagentur
Greece	EL	Regulatory Authority for Railways
Hungary	HU	Rail Regulatory Body
Ireland	IE	Commission for Railway Regulation
Italy	IT	Autorità di Regolazione dei Trasporti
Kosovo*	XK*	Railway Regulatory Authority
Latvia	LV	State Railway Administration
Lithuania	LT	Communications Regulatory Authority of the Republic of Lithuania
Luxembourg	LU	Institut Luxembourgeois de Régulation
Netherlands	NL	Autoriteit Consument & Markt
Norway	NO	Statens jernbanetilsyn
Poland	PL	Urząd Transportu Kolejowego
Portugal	PT	AMT - Autoridade da Mobilidade e dos Transportes
North Macedonia	MK	Railway Regulatory Agency
Romania	RO	Consiliul Naţional de Supraveghere din Domeniul Feroviar

Serbia	RS	Directorate for Railways
Slovakia	SK	Transport Authority
Slovenia	SI	AKOS
Spain	ES	Comisión Nacional de los Mercados y la Competencia
Sweden	SE	Transportstyrelsen
Switzerland	CH	Rail Transport Commission (RailCom)
United Kingdom	UK	Office of Rail and Road

Kosovo (XK)*: This designation is without prejudice to positions on status and is in line with UNSCR 1244 (1999) and the ICJ Opinion on the Kosovo declaration of independence.

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Introduction

Participating countries

AT - Austria
BE - Belgium
BG - Bulgaria
HR - Croatia
CZ - Czech Republic
DK - Denmark
EE - Estonia
FI - Finland
FR - France
DE - Germany
EL - Greece
HU - Hungary
IE - Ireland
IT - Italy
XK - Kosovo*
LV - Latvia

LT - Lithuania
LU - Luxembourg
MK - North Macedonia
NL - Netherlands
NO - Norway
PL - Poland
PT - Portugal
RO - Romania
RS - Serbia
SK - Slovakia
SI - Slovenia
ES - Spain
SE - Sweden
CH - Switzerland
UK - United Kingdom

*Kosovo (XK): This designation is without prejudice to positions on status and is in line with UNSCR 1244 (1999) and the ICJ opinion on the Kosovo declaration of independence.

This working document complements the 12th IRG-Rail Market Monitoring Report[1]. It provides additional context to support the results presented in the main report and more detailed analysis on the developments across monitored countries.

Structure of the working document

The structure of this document follows that of the Main Report, with chapters on the network characteristics of the railway market (Chapter 2), Track Access Charges (Chapter 3), market players and European rail traffic (Chapter 4) before analysing the rail freight (Chapter 5) and the rail passenger (Chapter 6) markets.

The Working Document also includes a summary of important regulatory decisions taken in each country in 2022 (Chapter 7).

All data provided in tables and figures within this Working Document are available for download in *.xlsx* format from the IRG-Rail website[2].

[1] The main document of the 12th IRG-Rail Market Monitoring Report can be found here.
[2] The data are available here.

02

Characteristics of the railway network

2.1. Total route length

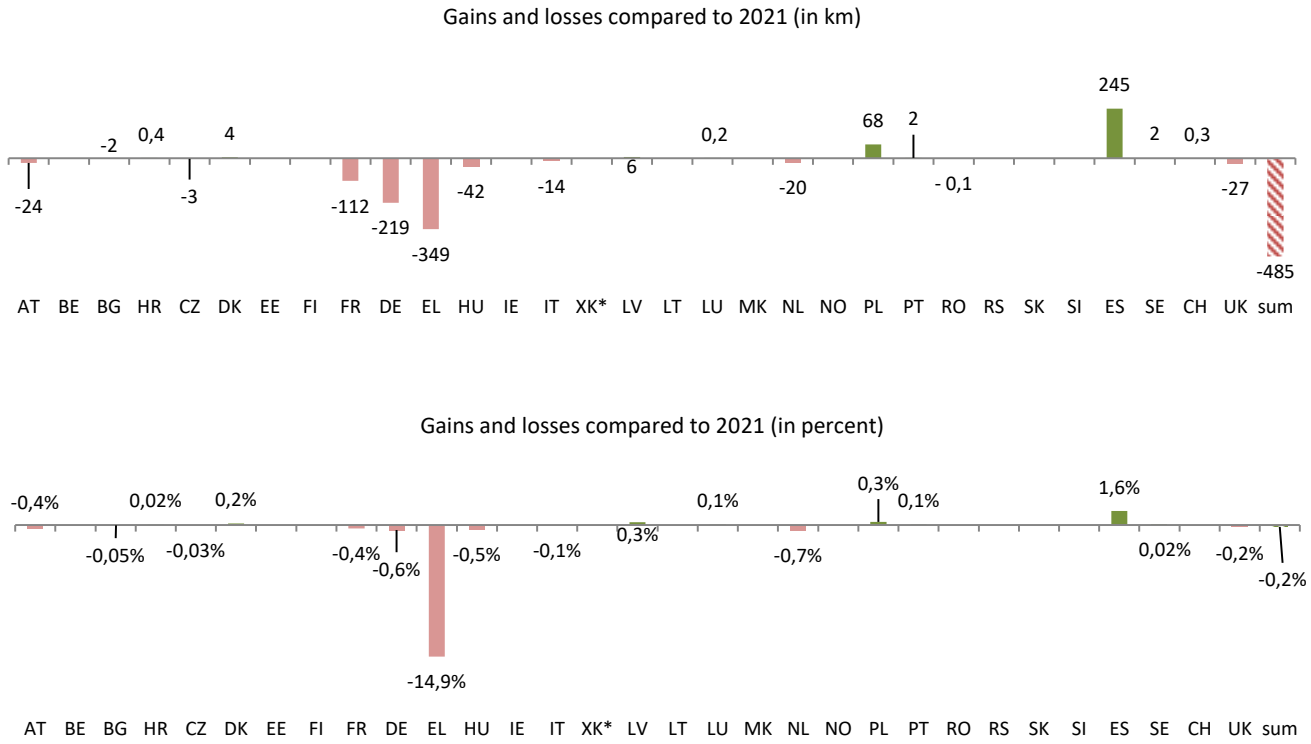
Total route length across the monitored countries was approximately 233,294 km in 2022.

Compared to 2021, seven countries reported an increase in total route length. Most notable was the increase in Spain (+245 km in total route length), which was due to the development of additional high-speed routes. Spain also had the largest increase in relation to total route length (+1.6%).

On the other hand, ten countries reported a decrease in total route length (Austria, Bulgaria, Czech Republic, France, Germany, Greece, Hungary, Italy, Netherlands and United Kingdom).

Greece reported the largest decrease in relation to total route length (-14.9%), due to the removal of a section from the active network.

FIGURE 1 - EVOLUTION OF TOTAL ROUTE LENGTH (IN KM AND IN %) BETWEEN 2021 AND 2022

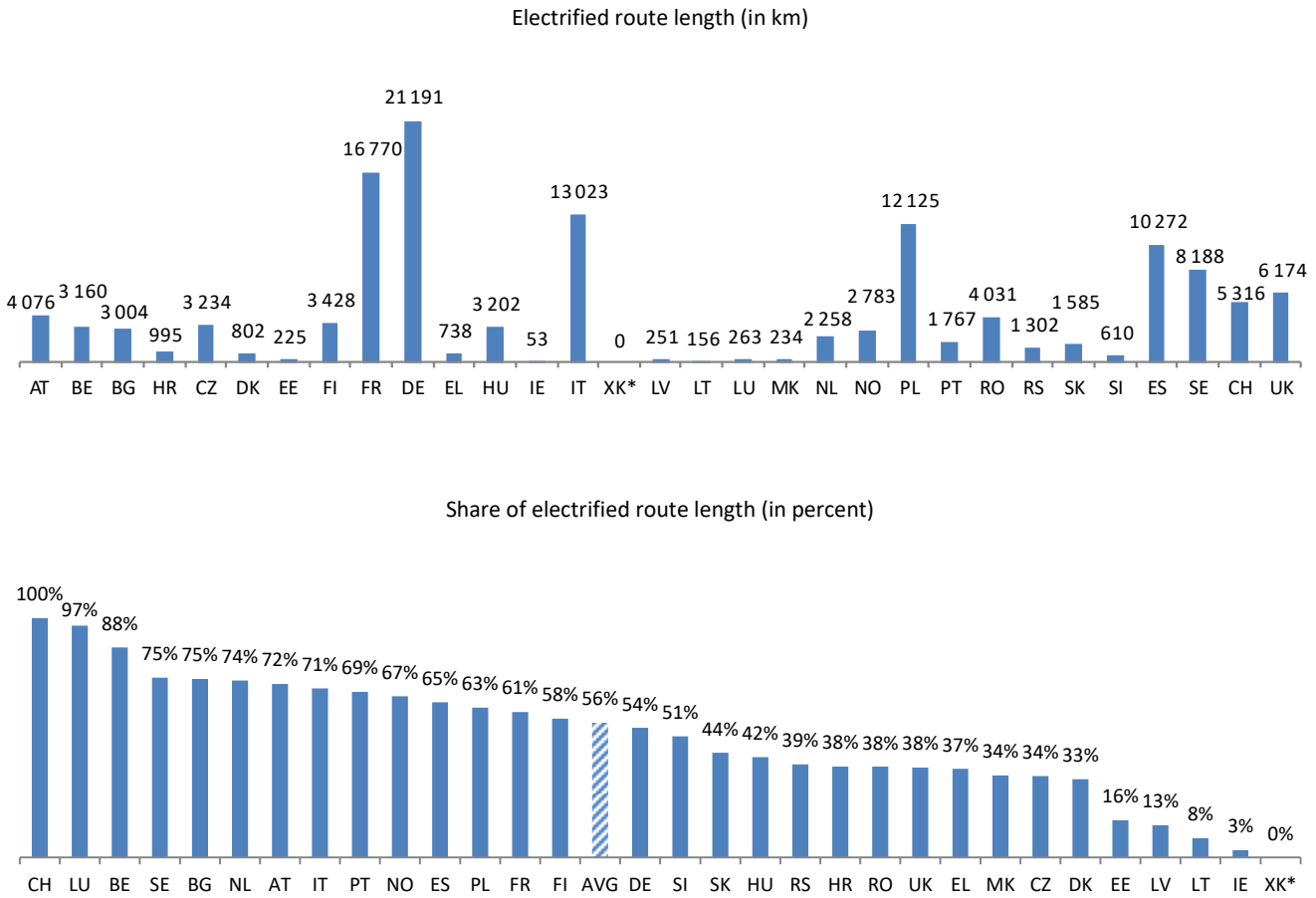


2.2. Electrified route length

In 2022, 56% of the total railway network in participating countries was electrified. This proportion has gradually been increasing in recent years. The level of electrification of the railway network varies significantly between monitored countries. Switzerland is the only country with a fully electrified network, while Kosovo has the only European network where no tracks are electrified. Eight countries have a railway network where 70% or more of the tracks are electrified. The top three are Switzerland (100%), Luxembourg (97%) and Belgium (88%). In six of the monitored countries, (Denmark, Estonia, Ireland, Kosovo, Lithuania and Latvia), the level of electrification is below a third of the total railway network.

Compared to 2021, some countries show an increase in the length of electrified route, with Denmark (+41km), Finland (+69km) Portugal (+50km) all having increases of between 2 and 5 percentage points.

FIGURE 2 - ELECTRIFIED ROUTE LENGTH (IN KM AND IN % OF THE TOTAL ROUTE LENGTH) IN 2022



2.3. High-speed route length

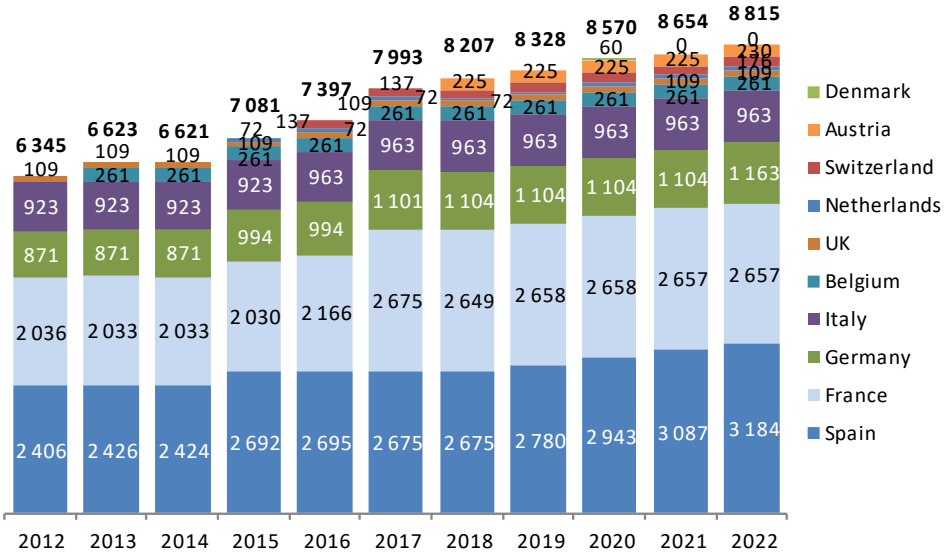
Another indicator of the ongoing development of the European railway network is the expansion of high-speed lines. Among the monitored countries, ten countries have reported featuring dedicated high-speed lines as defined in the European Commission's Implementing Regulation 2015/1100.

Spain and France have the longest high-speed lines. Together they run approximately two-thirds of the total high-speed lines in all monitored countries.

The total high-speed route length increased by almost 2% between 2021 and 2022 and has been gradually growing during recent years[3].

FIGURE 3 – HIGH-SPEED ROUTE LENGTH FROM 2012 TO 2022

(in km per country)



2.4. ETCS-enabled route length

ERTMS/ETCS (European Rail Traffic Management System/European Train Control System) network compatibility is an indicator for the degree of interoperability across European rail networks. In 2022, 19 countries reported ETCS-enabled routes. Luxembourg has the highest share of ERTMS/ETCS-enabled route length (97%), followed by Belgium (93%) and Switzerland (74%).

[3] Denmark is not included in the 2021 and 2022 data because of speed modifications in their Network Statement.

Besides these three countries, there are five more countries with a share of ERTMS/ETCS-enabled route length higher than 10%: Slovenia, Denmark, Spain, Austria and the Netherlands. Belgium showed the largest increase of ERTMS/ETCS-enabled route length, from 73% in 2021 to 93% in 2022.

FIGURE 4 - ERTMS/ETCS-ENABLED ROUTE LENGTH IN 2022

(in km per country)

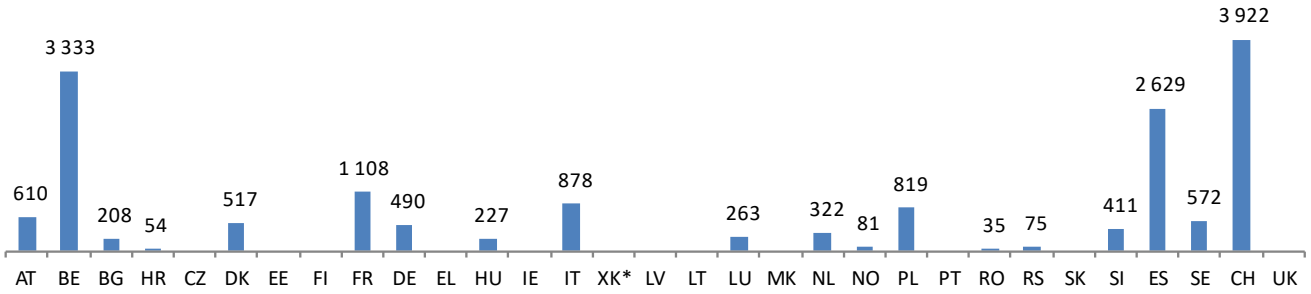
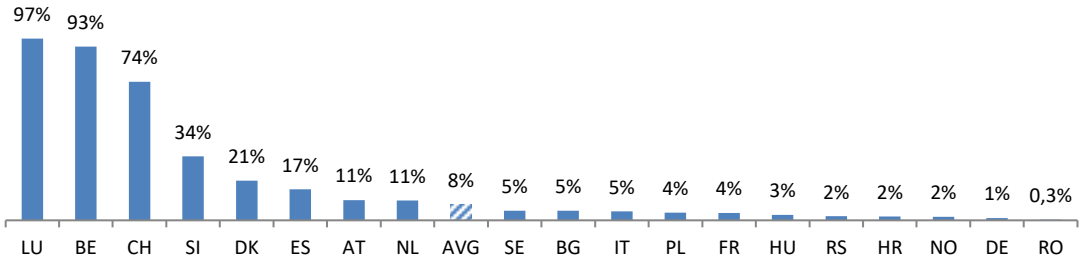


FIGURE 5 - ERTMS/ETCS-ENABLED ROUTE SHARE OF TOTAL ROUTE LENGTH IN 2022

(in percent)



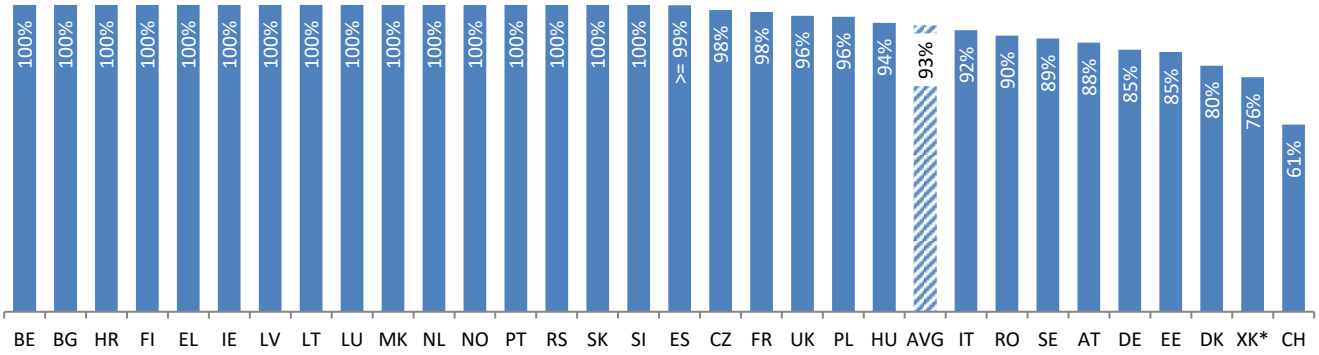
2.5. Main infrastructure managers' share of route length

In 2022, the main infrastructure managers in the monitored countries administrated 93% of the total route length on average. This share slightly decreased compared to 2021 (when it was 94%).

The main infrastructure manager administrates the entire network in 16 countries. Overall, the share of the main infrastructure manager typically does not change much from year to year. In eight countries, the share is 90% or higher, but still below 100%. In three countries, the share is 80% or lower: Switzerland (61%), Kosovo (76%) and Denmark (80%). This is explained in Switzerland by the regional organization of railroads, and in Denmark by several regional or international railways connected to the main infrastructure and managed by other infrastructure managers than the main infrastructure manager, Banedanmark.

FIGURE 6 - MAIN INFRASTRUCTURE MANAGERS' SHARE OF TOTAL ROUTE LENGTH IN 2022

(in percent)



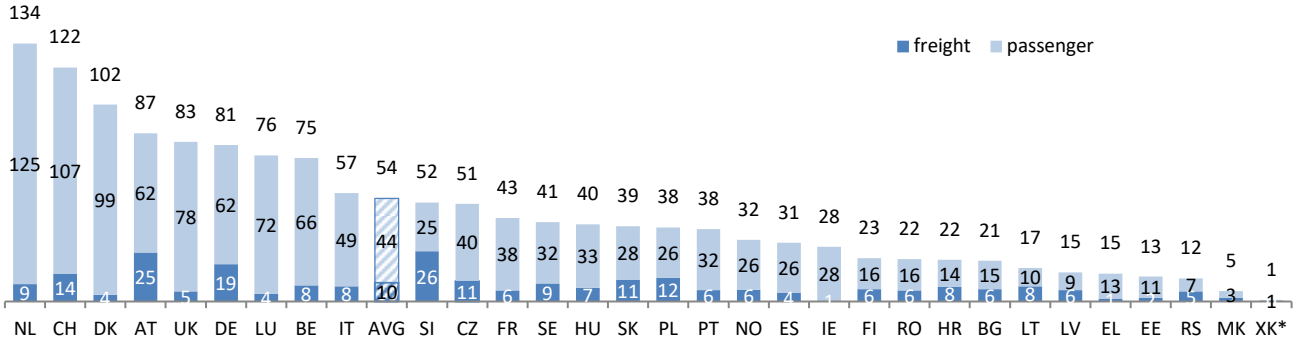
2.6. Network usage intensity

Network usage intensity is an indicator of the overall occupancy of the railway network, as it measures the number of train-km per route-km per day for freight and passenger services. Since the measurement is done for the whole country, it does not account for how usage can vary between different regions within a country.

For passenger services, the average usage was 44 train-km per route-km per day in 2022, up from 42 train-km per route-km per day in 2021. In almost all countries the network usage intensity for passenger services increased or remained the same compared to 2021. The exceptions were Netherlands (-11), Luxembourg (-3), and North Macedonia (-1), where the network usage intensity for these services decreased.

FIGURE 7 - NETWORK USAGE INTENSITY IN 2022

(in train-km per route-km per day)



The rail network was predominantly used for passenger services in almost all monitored countries. The network usage intensity for these services was highest in Netherlands, followed by Switzerland, Denmark and the UK. In 2022, post the pandemic years, passenger services have returned to the 2019 average passenger traffic level, at 44 train-km per route-km per day.

- 19 countries reported the same or higher levels of passenger traffic in 2022 in comparison with 2019, with Latvia, Estonia and Denmark all having net increases above 10%.
- 5 other countries reported a network usage for passenger services between 90% and 100% of 2019 levels.
- 3 countries reported passenger traffic below 90% of 2019 levels: United Kingdom (83%), Spain (87%), and Croatia (88%), but all three have the same or better levels in comparison to 2021 figures. In the UK[4], this is due to UK fewer journeys for business and commuting reasons compared to 2019.

For freight services, which were less affected by the COVID-19 pandemic, the average of between 9 and 10 train -km per route-km per day has remained constant from 2019 to 2022. The network usage intensity for freight services was the highest in Slovenia, Austria and Germany.

Slovenian network is the only network that is used more intensively by freight services than by passenger services.

2.7. Network usage intensity on electrified and non-electrified routes

Another indicator that has been collected for this report is the network usage intensity on electrified and non-electrified routes. This indicator is derived from the volume of electrified train-km and does not exactly equal the total usage intensity on electrified and non-electrified routes, since non-electrified trains (mainly diesel trains) may also be operated on electrified routes. Therefore the "network usage intensity on electrified routes" may be interpreted as an underestimated value, whereas the "network usage intensity on non-electrified routes" may be interpreted as an overestimated value. 21 IRG-Rail members were able to provide this indicator.

The results show that the electrified network usage intensity is higher in all monitored countries. Indeed, in all but three countries (Estonia, Lithuania and Luxembourg) the usage intensity for electrified routes is at least twice that of non-electrified routes. In several countries, the differences are even bigger, with a network usage several times higher on the electrified routes. Possible reasons explaining this difference may be the more efficient capacity management on electrified routes due to their technical equipment (which allows for higher volumes of traffic) or the type of rolling stock and traction energy used for rail activities per country. A correlation can also be assumed between the electrification of the railway network and the higher level of traffic observed (or expected) on these routes.

The most extreme example of a much higher use of electrified than non-electrified network usage is Sweden where the network usage intensity is 27 times higher on the electrified than on the non-electrified part of the network. This can be explained by the fact that all major lines with high traffic intensity are electrified and that prices for traction electricity in Sweden have historically been much lower than prices for diesel fuel.

[4] Comparisons of 2022 and 2019 figures for the UK should be interpreted with caution due to the opening of the Elizabeth line in London, which opened in May 2022 and has seen over 100 million passenger journeys in 2022.

FIGURE 8 – NETWORK USAGE INTENSITY ON ELECTRIFIED ROUTES IN 2022

(in electrified train-km per electrified route-km per day)

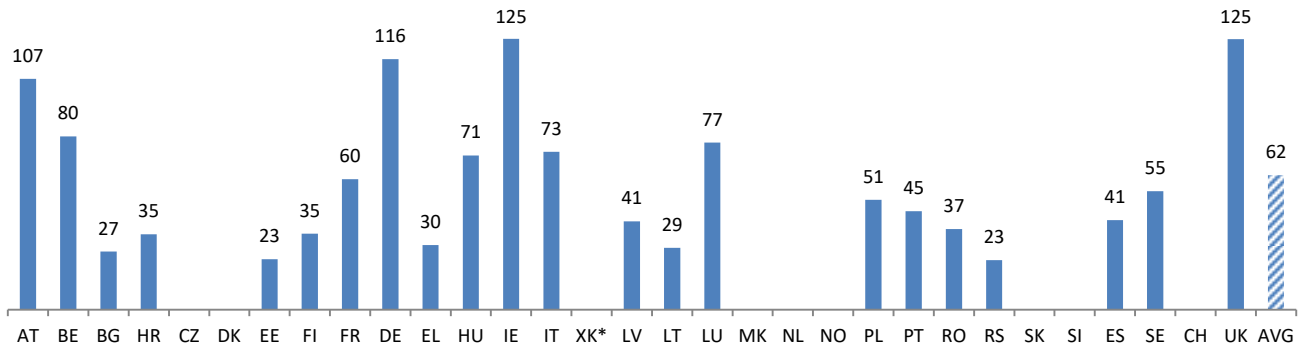
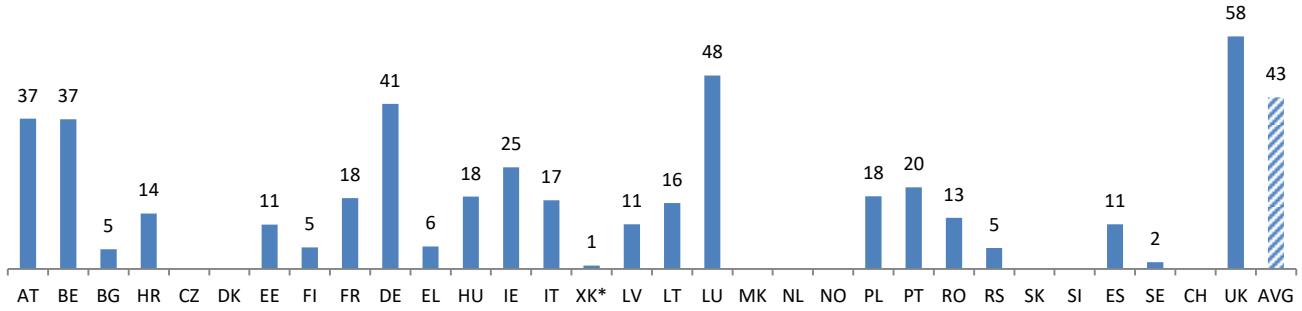


FIGURE 9 – NETWORK USAGE INTENSITY ON NON-ELECTRIFIED ROUTES[5] IN 2022

(in non-electrified train-km per non-electrified route-km per day)



2.8. Infrastructure managers' expenditures

For the indicator regarding the IM's expenditures on maintenance, renewals, upgrades and new infrastructure on the network, the definitions used are the same as the ones used in the European Commission's Implementing Regulation 2015/1100[6].

[5] As mentioned in the introduction of this paragraph, this indicator is computed as the ratio of total non-electrified train-km over the non-electrified route length. As non-electrified train-km may partly be operated on the electrified network, this indicator must be interpreted as an overestimated value.

[6] As precised in the referred regulation, "*Maintenance*" expenditures comprise non-capital expenditure that the infrastructure manager carries out in order to maintain the condition and capability of the existing infrastructure. "*Renewal*" expenditures are capital expenditure on a major substitution work on the existing infrastructure which does not change its overall performance. "Investments-*Upgrade*" are capital expenditure on a major modification work of the infrastructure which improves its overall performance, and "Investments-*New infrastructure*" are capital expenditure on the projects for construction of new infrastructure installations.

FIGURE 10 – INFRASTRUCTURE MANAGERS' EXPENDITURES IN 2022

(in million Euro)

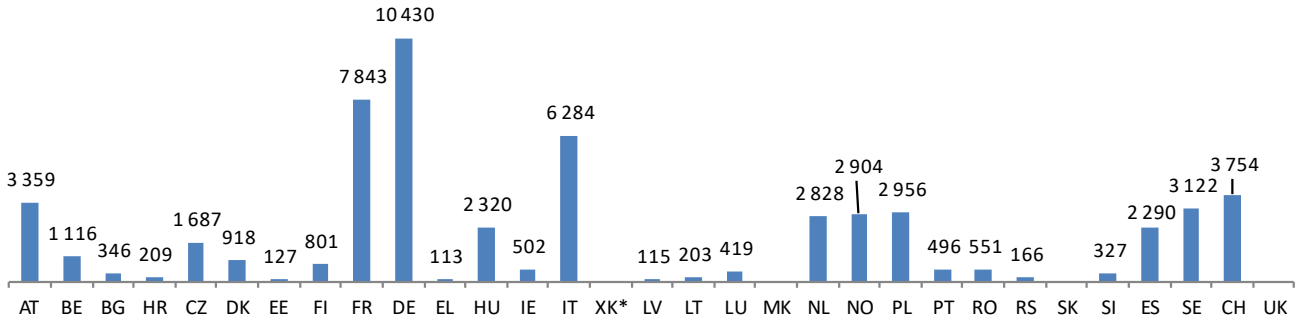
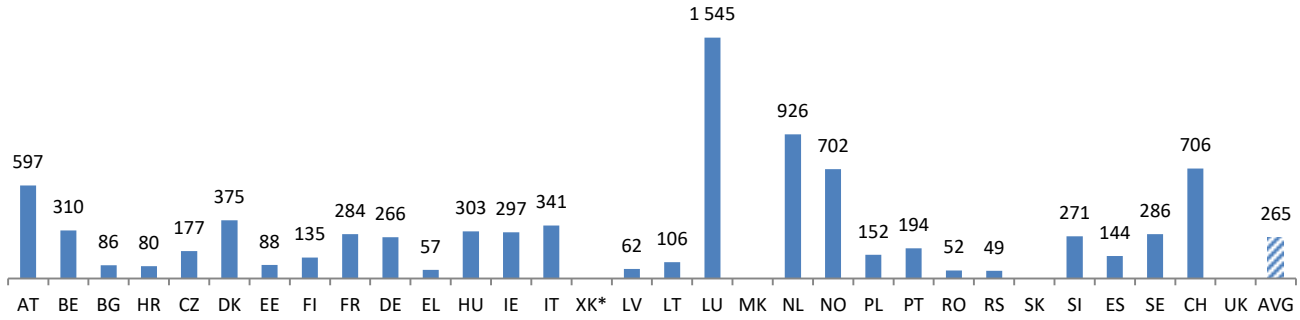


FIGURE 11 – INFRASTRUCTURE MANAGERS' EXPENDITURES PER ROUTE KM IN 2022

(in thousand Euro)



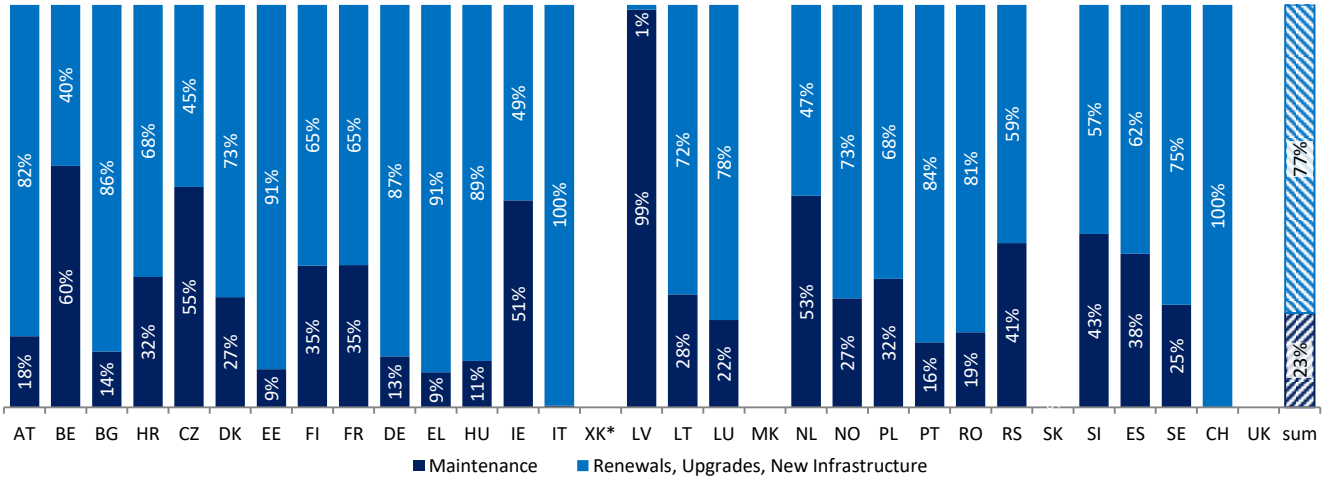
In relation to IM's expenditures in 2022, 22 IRG-Rail members responded to this question. Similar to 2021, the highest level of IM's expenditures was reported from Germany, followed by France. This is related to the fact that these two countries have the longest networks.

However, the length of the network doesn't seem to be the only determinant for the IM's expenditures. Calculated per route-km, Luxembourg is the country with the highest level of IM's expenditure on its infrastructure, followed by the Netherlands, Switzerland and Norway.

The proportion of the total expenditure which is spent on maintenance, renewals, upgrades and new infrastructure respectively varies substantially between the countries. While in 2021, the data showed the average expenditure by infrastructure managers was a split of 24% on maintenance and 76% on renewals, upgrades and new infrastructure, in 2022 the average expenditure fell slightly for maintenance (23%) in favour of the other categories.

FIGURE 12 – SHARE OF INFRASTRUCTURE MANAGER'S EXPENDITURES IN 2022 ON MAINTENANCE, RENEWAL, UPGRADES AND NEW INFRASTRUCTURE

(in percent)



The differences between countries and between average yearly expenditure may be explained by numerous reasons.

- Certain countries possess older networks, which now require increased attention towards maintenance and renovation. On the other hand, high-speed lines are usually more expensive to build than conventional ones, which entails higher expenditures for countries investing in that type of infrastructure.
- Data can be skewed by specific project spendings on any given year in each country.
- The differences in the usage intensity of the network can also explain why some countries have more expensive maintenance and renewal costs.
- Another reason might be related to specific infrastructures (tunnels, bridges, level crossings, safety systems) or specific systems (safety systems, trackside equipment required for train control systems such as ERTMS). This would require more investments and maintenance than the sole construction and maintenance of the railway network.

03

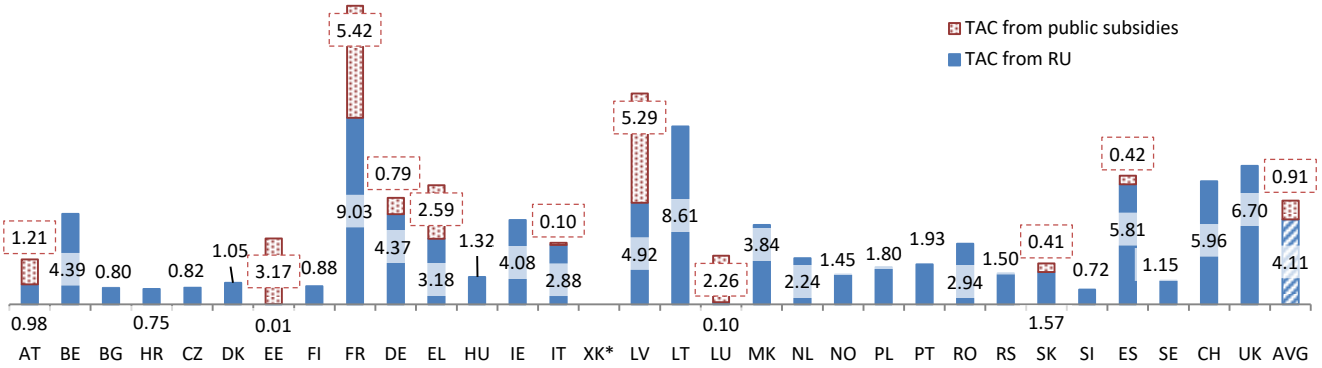
Track Access Charges paid for the minimum access package

3.1. Track Access Charges per train-km paid for the minimum acicess package

The average level of Track Access Charges (TAC) per train-km paid by railway undertakings or by means from public funds, continued to vary widely across European countries. Based on Regulation (EU) 2020/1429, several governments had expanded their subsidies for TAC in 2020 and 2021 to alleviate the negative impact of the COVID-19 pandemic on railway undertakings. Based on this Regulation, subsidies were allowed as TAC-repayments, TAC-reductions or TAC-suspensions. In 2022, with the end of the pandemic, those measures were partly taken back again, but in many cases continued until the end of 2022.

FIGURE 13 - TRACK ACCESS CHARGES PAID FOR THE MINIMUM ACCESS PACKAGE IN 2022[7]

(in Euro per train-km)



In 2022, railway undertakings in eight countries paid less than €1 per train-km (without subsidies). On the other hand, the highest charges had to be paid by railway undertakings in France (€9), Lithuania (€8.6) and the UK (€6.7). The European average TAC, without subsidies, rose from €3.64 in 2021 to €4.11 in 2022. This was an increase of 13%, larger than the average inflation rate of 8.5% over the same period. The European average of total TAC per train-km including subsidies amounted to €5.02 (see section 3.3).

There are several factors for the wide variation in TAC between countries, such as differences in the implementation of Directive 2012/34/EU (referring to the costs that are passed through by the IMs), the level of mark-ups and different charging approaches for passenger and freight services as well as different COVID-19 pandemic-related subsidisation schemes[8]. As a result, Figure 13 cannot necessarily be used for direct comparisons between countries.

[7] The average value in this graph differs from the one in the Main Report since the sample is different. This one includes all available data for 2022 (29 countries) while in the Main Report it includes only the countries which provided data for the 2018-2022 period (26 countries).
[8] IRG-Rail published several papers regarding charging practices in Europe. Details regarding the structure and variations of TAC levels observed in European countries can be found in the paper 'Review of charging practices for the minimum access package in Europe' (2020), available here.

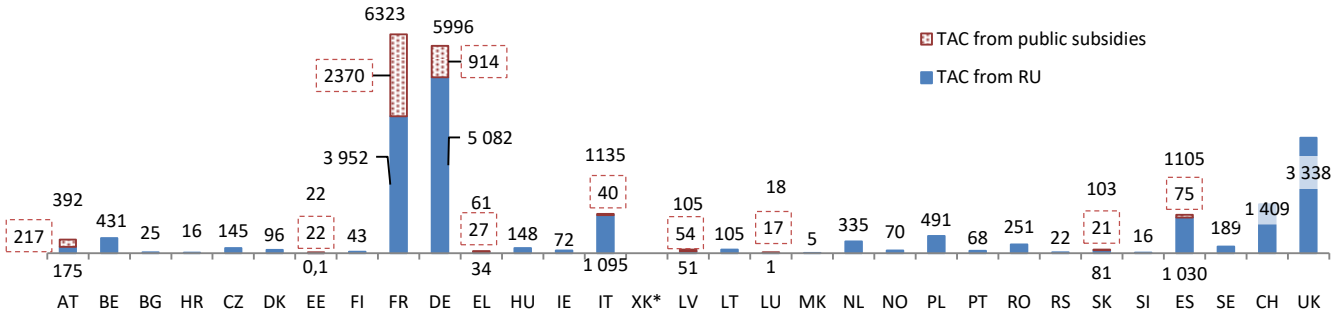
3.2. Total Track Access Charge volume in European countries

The total amount of track access charges received by infrastructure managers in Europe added up to €22.5 billion in 2022, which is 9% higher than the level of 2021 (€20.7 billion). This results from the increase in train-km by 3% from 2021 to 2022. On the other side, charges per train-km were raised by 6% in 2022 compared with the year before.

More than 50% of the overall European TAC volume was generated in Germany and France. Adding the UK, Switzerland, Italy, Spain, Poland and Belgium, 90% of the European TAC volume is covered by those eight countries. The remaining 22 countries accounted for just 10% of the total TAC (Figure 14).

FIGURE 14 - TOTAL TRACK ACCESS CHARGES FOR THE MINIMUM ACCESS PACKAGE[9] PER COUNTRY IN 2022

(in million Euro)



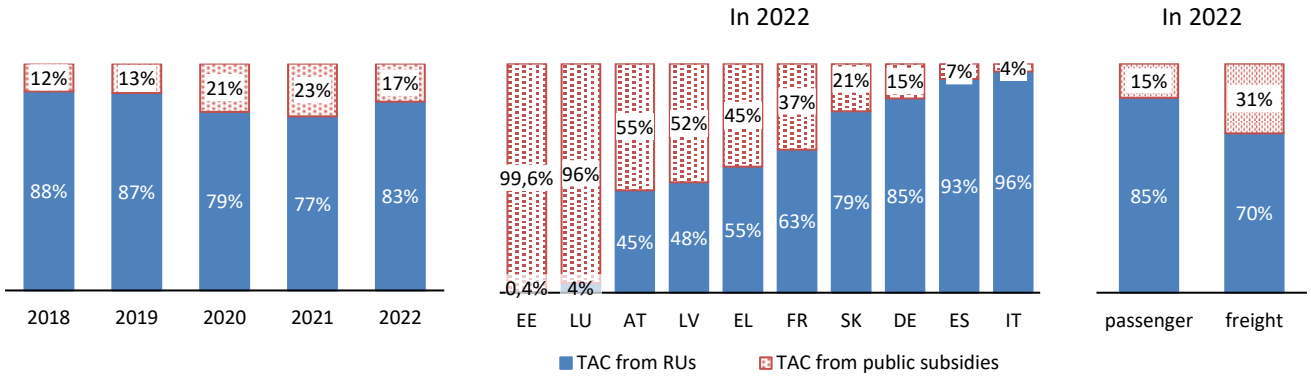
3.3. Track Access Charges from railway undertakings and from public subsidies

After increases in TAC from public subsidies in 2021, due to pandemic-related measures introduced by governments, the share of TAC from public subsidies over total TAC went down to 17% in 2022 from 23% in 2021. Ten countries reported public subsidies: Austria, Estonia, France, Germany, Italy, Luxemburg, Latvia, Greece, Slovakia and Spain (Figure 15). Estonia´s and Luxemburg´s governments granted nearly all TAC in 2022. TACs were part-subsidised in other countries. The share of TAC for freight services (30%) was more than twice the share of TAC for passenger services (15%).

Reductions in subsidised TAC will probably continue in 2023 when measures will either be scaled down or be phased out with the end of 2022.

[9] Please note that the total TAC is a proxy of the sum of TAC from railway undertakings and TAC from public subsidies. Other subsidisation schemes such as direct State aids to the infrastructure managers (applied in particular in the context of the COVID-19 outbreak) in compensation of discounts applied to the TAC may be excluded from this indicator.

FIGURE 15 - SHARE OF TOTAL TRACK ACCESS CHARGES FOR THE MINIMUM ACCESS PACKAGE FROM RAILWAY UNDERTAKINGS AND FROM PUBLIC SUBSIDIES[10]



3.4. Track Access Charges for passenger and freight services

Figure 16 shows that there are substantial differences between countries in the share of TAC paid by railway undertakings for freight services and for passenger services. The share of charges collected from passenger services is around or above 80% in around half of the countries. One reason is that the charges per train-km for passenger services are typically higher than those for freight services. On the contrary, there are ten countries where more than half of the TAC volume is paid for freight services – especially in the Baltic states with more than 80% to 100% share of freight TAC. However, nominal TAC for 2022 may be influenced by pandemic-related measures, such as TAC reimbursements or TAC reductions applied differently to passenger and freight services.

[10] Countries for which TAC partially comes from public subsidies.

FIGURE 16 - SHARE OF TAC PAID BY RAILWAY UNDERTAKINGS FOR PASSENGER AND FREIGHT SERVICES IN 2022[11]

(in percent)

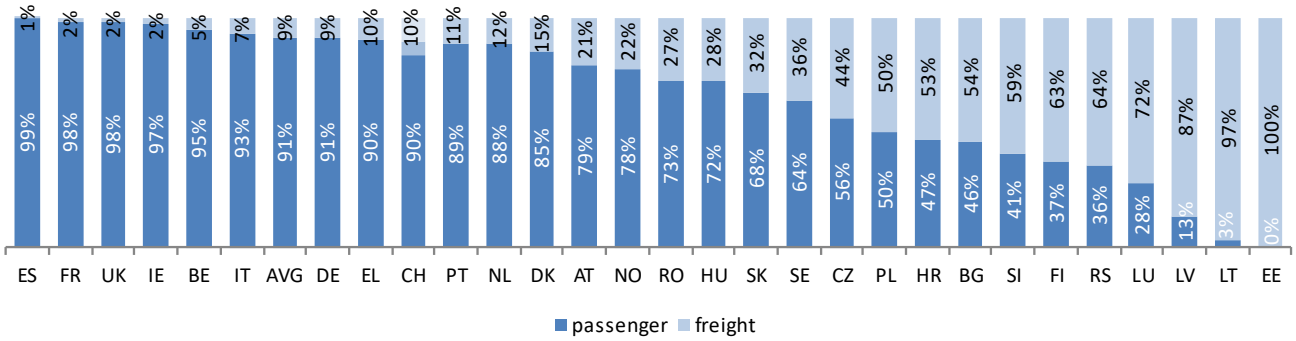


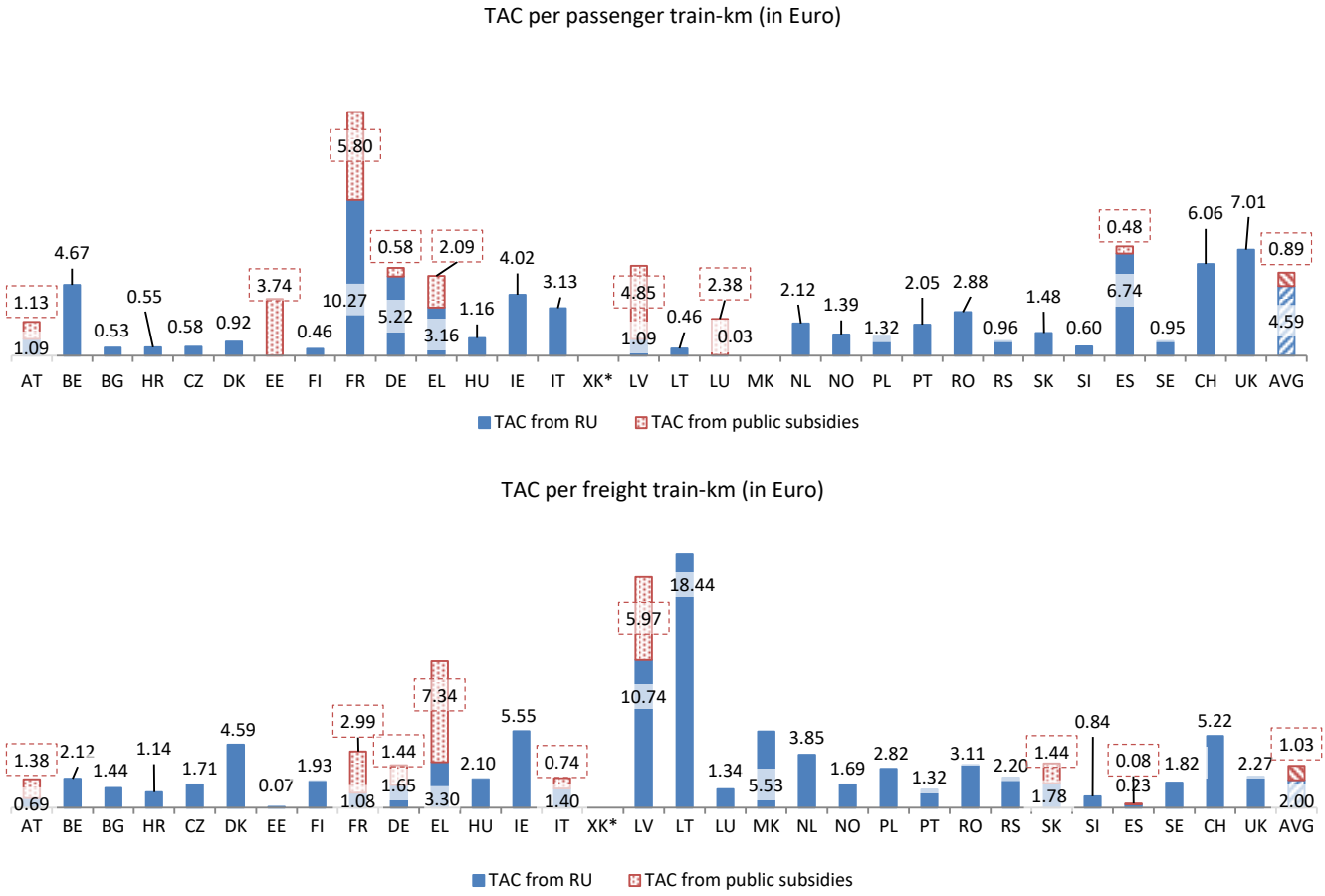
Figure 17 reveals large differences between countries, as well as differences between TAC for freight and passenger services within individual countries.

Railway undertakings paid €4.59 on average per passenger train-km, 11% higher than the €4.14 recorded in 2021. This rise is higher than the inflation rate (8.5%) over the same period. Passenger TAC increased in the majority of 20 countries. However, eight countries recorded a decline. The country-specific changes in passenger TAC compared with 2021 ranges from -50% to +50%. In many cases, these changes were impacted by state financial measures which were either extended or cut back.

For freight services, the TAC paid by railway undertakings increased by more than that for passenger services. With an average of €2.00 in 2022 and €1.34 in 2021, this equals an increase of 34%, driven by both reduced public subsidies and high inflation. In 14 countries, charges in 2022 were higher than in 2021, though decreases were observed in 15 countries. The biggest influence came from Germany where freight TAC subsidies decreased from 95% in 2021 to around 42% in 2022, causing a TAC increase of 800 % from €0.19 in 2021 to €1.65 in 2022, although this freight TAC level in Germany still is only half of normal levels which are based on approved charges. Also, in some other countries, freight TAC was largely subsidised by the state in 2022, such as in Estonia. The lowest regular freight TAC could be found in Spain with €0.23, while the highest freight TAC of €18.44 was seen in Lithuania followed by Latvia with €10.74.

[11] The average value in this graph differs from the one in the Main Report since the sample is different: this one includes all the available data for 2022 while in the Main Report it includes only the countries which provided data for the 2018-2022 period.

FIGURE 17 - TRACK ACCESS CHARGES PAID PER TRAIN-KM FOR PASSENGER AND FREIGHT SERVICES IN 2022[12]



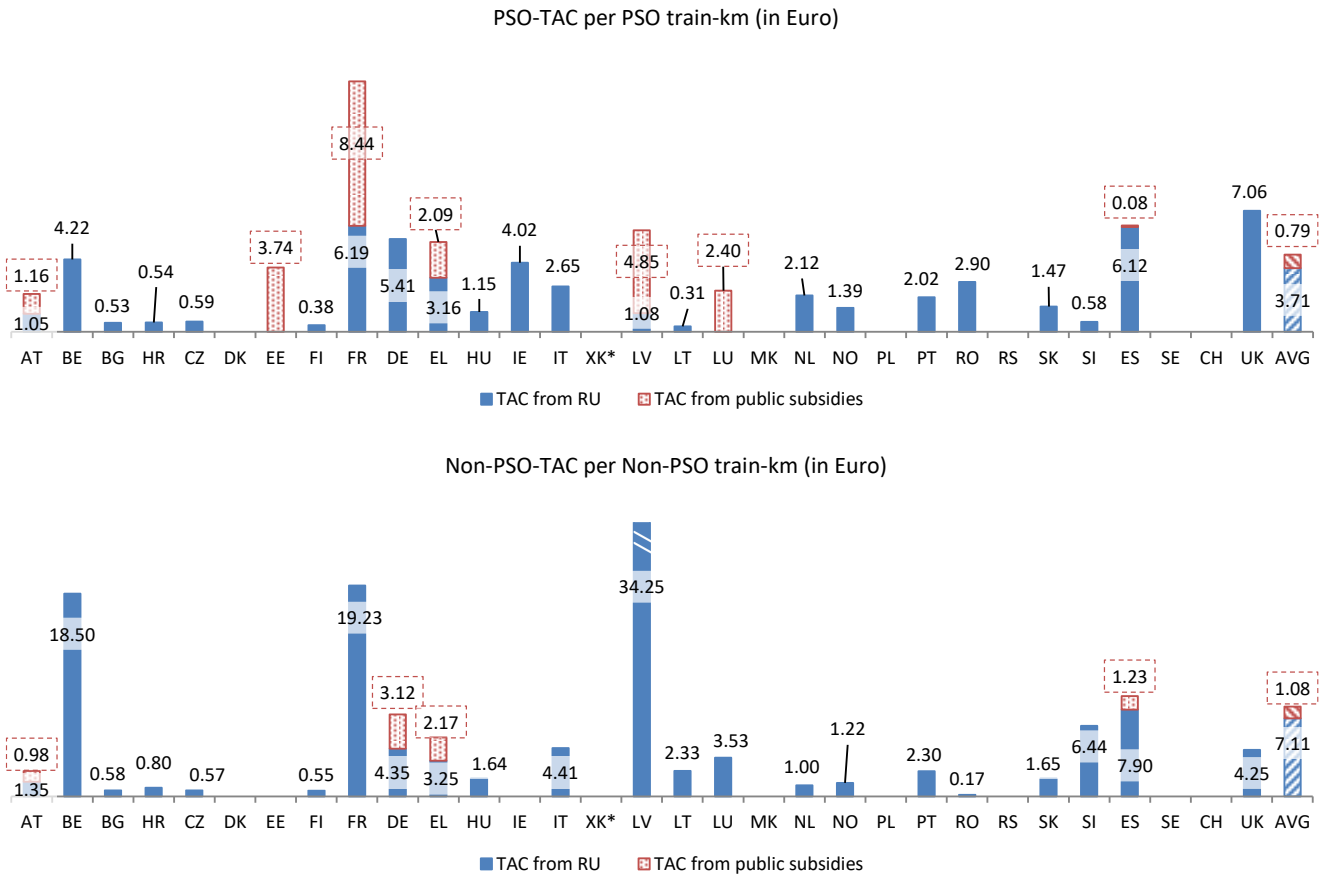
A larger increase of TAC from railway undertakings per train-km is observed for non-PSO services. From 2021 to 2022, the average TAC per non-PSO train-km increased substantially by 36%, from €5.23 to €7.11, which is far higher than the increase in price level. The variance of TAC is also greater for non-PSO services, ranging from more than €34 in Latvia and around €19 in Belgium and France to the lowest level of €0.17 in Romania. Four countries reported subsidies for the non-PSO TAC: Austria, Germany, Greece and Spain. In Germany, the level of subsidies in 2022 reduced from 99% in 2021 to 42% in 2022, and it will be discontinued in 2023.

Figure 18 presents the TAC per train-km paid by railway undertakings for PSO and non-PSO passenger services. In general, TAC for non-PSO services were nearly twice as high as TAC for PSO services. However, there are considerable differences between countries.

[12] The average value in this graph differs from the one in the Main Report since the sample is different: this one includes all the available data for 2021 while the one in the Main Report it includes only the countries which provided data for the 2016-2020 period.

Regarding PSO services, the level of TAC from RUs was below €1.00 per train-km for six countries, while in four countries it was above €5.00. In Luxembourg and Estonia almost all PSO TAC were subsidised by the state. High levels of subsidies were also seen in France, Austria, Latvia and Greece. On average, €3.71 were paid by railway undertakings per train-km in 2022, slightly higher than €3.59 of 2021 (+3%) and lower than the inflation rate (8.5%).

FIGURE 18 - TRACK ACCESS CHARGES PAID PER TRAIN-KM FOR PSO AND NON-PSO SERVICES IN 2022[13]

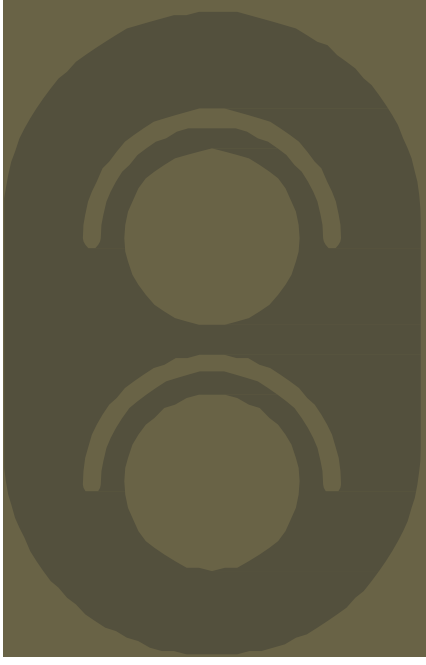


A larger increase of TAC from railway undertakings per train-km is observed for non-PSO services. From 2021 to 2022, the average TAC per non-PSO train-km increased substantially by 36%, from €5.23 to €7.11, which is far higher than the increase in price level. The variance of TAC is also greater for non-PSO services, ranging from more than €34 in Latvia and around €19 in Belgium and France to the lowest level of €0.17 in Romania. Four countries reported subsidies for the non-PSO TAC: Austria, Germany, Greece and Spain. In Germany, the level of subsidies in 2022 reduced from 99% in 2021 to 42% in 2022, and it will be discontinued in 2023.

[13] The average value in this graph differs from the one in the Main Report since the sample is different: this one includes all the available data for 2022 while the one in the Main Report it includes only the countries which provided data for the entire 2018-2022 period.

04

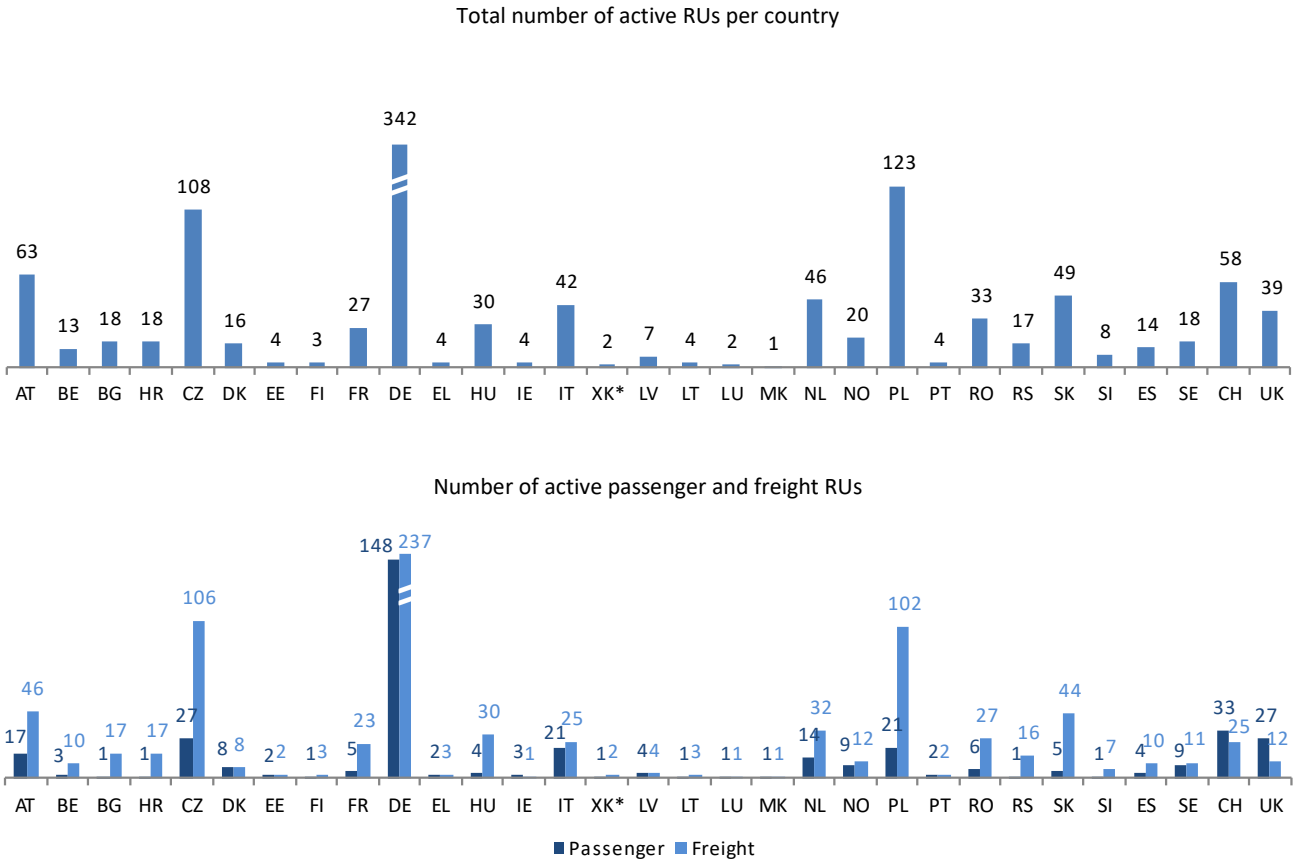
Market players and European rail traffic



4.1. Railway undertakings

The number of active railway undertakings among IRG Rail member countries varies considerably, from a single undertaking in North Macedonia to 342 railway undertakings in Germany. This diversity can be attributed to several factors including historical national developments, barriers to market entry and the impact of past mergers. The presence of just one active railway undertaking providing both PSO passenger and freight services in North Macedonia indicates a highly concentrated and monopolised railway market. Conversely, higher numbers of active railway undertakings as seen in Germany (342), Poland (123) and Czech Republic (108) indicate enhanced levels of competition in these markets. Noteworthy is that Poland recorded the highest increase in active railway undertakings (+8) over the span of one year. Looking at the broader picture, compared to 2021, most countries reported either no change (15) or an increase (12) in the number of active railway undertakings while only four countries saw a decrease.

FIGURE 19 - NUMBER OF ACTIVE RAILWAY UNDERTAKINGS (TOTAL AND PER SERVICE) IN 2022



In most member countries (22), active railway undertakings operating freight services outnumbered those operating passenger services. Only Ireland, Switzerland and the United Kingdom displayed the opposite trend which had already been observed in previous years. This phenomenon is likely the result of the fact that the

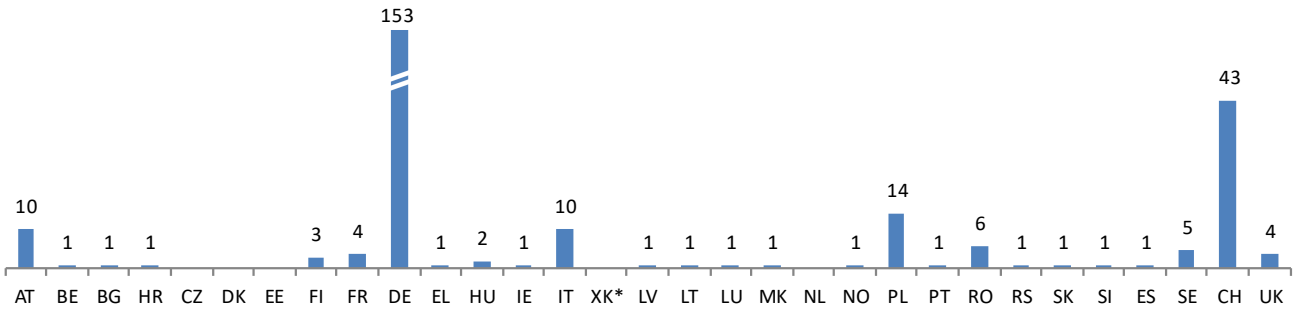
liberalisation process being substantially more progressed for rail freight traffic than for rail passenger traffic in the majority of countries. The deadline for the *de jure* EU liberalisation of the railway markets[14] was effective in January 2007 for freight services but more than ten years later for domestic passenger services[15]. In six countries, the number of freight and passenger railway undertakings are equal. However, as some companies engage in both passenger and freight services, the total number of active passenger and freight railway undertakings may not align with the overall figure for each country.

4.2. Infrastructure managers

The participating IRG-Rail countries report a total of 269 infrastructure managers for 2022. Similar to the variation in the number of active railway undertakings, the figures illustrate considerable differences in the number of infrastructure managers across Europe, ranging from 1 to 153. As many as 15 countries report only one infrastructure manager operating the whole network, while five countries have difficulties in determining the number of infrastructure managers operating in their markets.

The evolution of the number of infrastructure managers in a given country may likely be shaped by historical developments, geographic attributes, and demographic conditions. For profitability reasons, many infrastructure managers have shifted control of certain regional networks to local governments, which decentralised the management of specific regional networks. A notable example is Spain, where the main infrastructure manager exclusively oversees an expansive railway network, including one of Europe's largest high-speed track systems and where neither regional nor new infrastructure managers have emerged to challenge its dominance.

FIGURE 20 - NUMBER OF INFRASTRUCTURE MANAGERS IN 2022



Germany takes the lead with the highest number of infrastructure managers (153), followed by Switzerland (43), Poland (14) and Austria (10). High numbers of infrastructure managers are mostly seen in federal states, a trend likely to be influenced by regionalism within their political systems and the impacts of liberalisation.

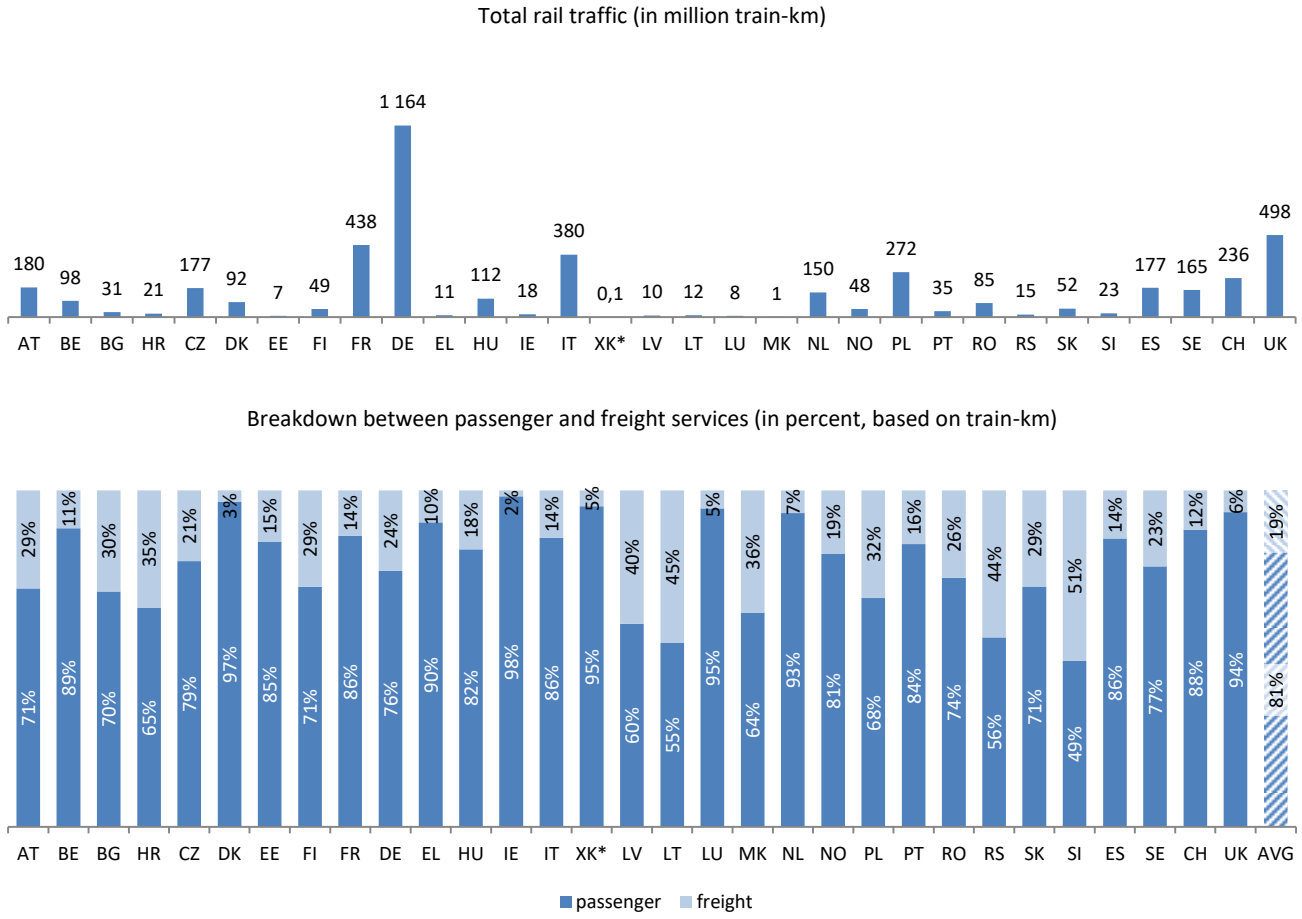
[14] According to the Directive 2004/51/EC of the second railway package. This Directive was repealed by Directive 2012/34/EU establishing a single European railway area.

[15] In December 2020 (for non-PSO services) and in December 2023 (for the award of new PSO contracts).

4.3. Total rail traffic

In 2022, the combined train-km count for all member countries reached 4.56 billion, 10% increase on the 4.15 billion recorded in 2020. However, this figure remains 1% lower than the 4.62 billion recorded in 2019. The highest share of the total traffic was observed in Germany (25%), followed by the United Kingdom (11%), France (10%) and Italy (8%). Together, these four countries made up over half of the overall European rail traffic (54%). In contrast, Kosovo and North Macedonia reported the lowest shares in their total rail traffic, accounting for 0.1 million and 1 million train-km, respectively.

FIGURE 21 - RAIL TRAFFIC AND BREAKDOWN BETWEEN PASSENGER AND FREIGHT SERVICES IN 2022



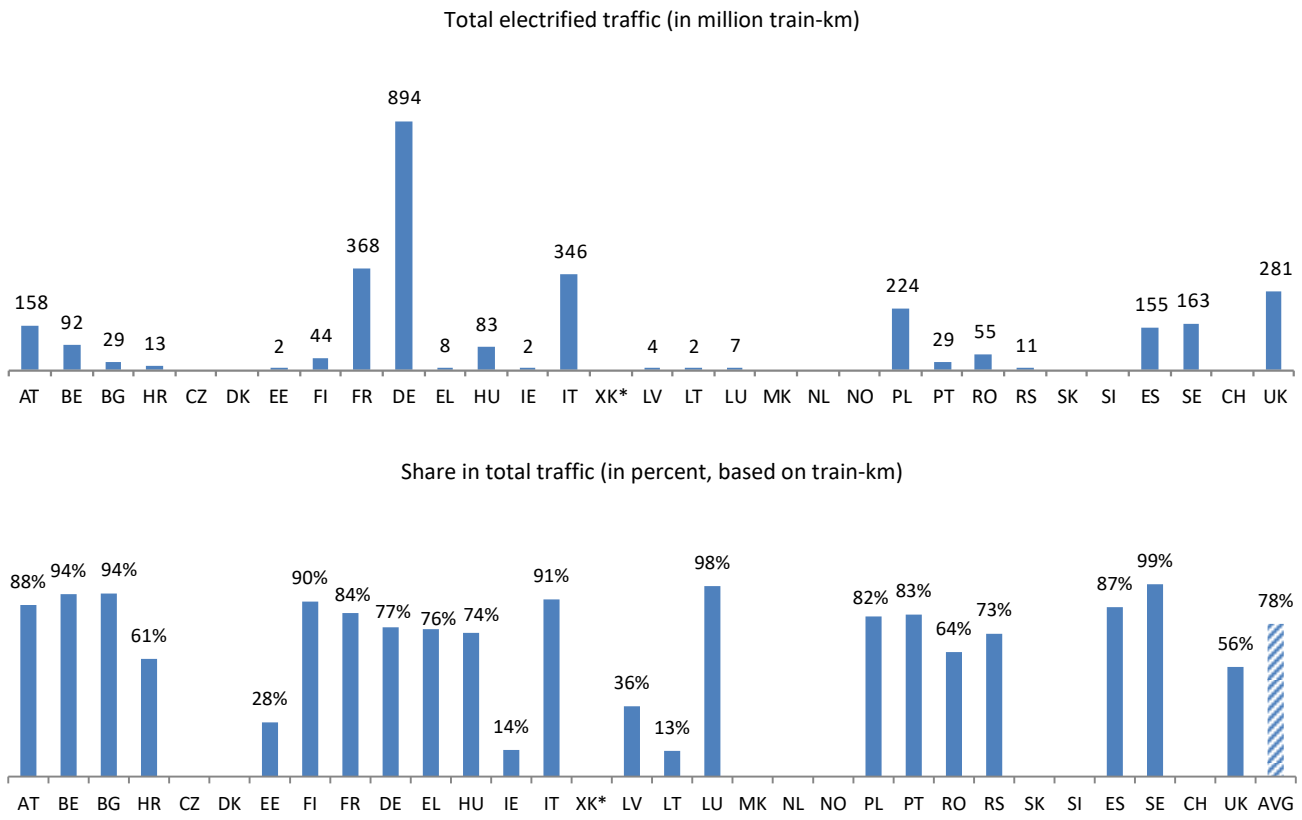
On average, passenger services accounted for 81% of total railway traffic in 2022, while freight traffic made up the remaining 19%. Despite fluctuations in train-km since 2010, the proportion of freight and passenger traffic has been consistently balanced, with the passenger market accounting for approximately 80-82% and freight 18-20%. The share of passenger train-km ranges from 49% (Slovenia) to 98% (Ireland). Slovenia stands out as the only country where the share of freight traffic exceeds passenger traffic in terms of train-km. Following closely are

Lithuania (45%), Serbia (44%), and Latvia (40%), each reporting freight traffic shares in train-km of 40% or above. Conversely, Denmark (97%), Kosovo (95%), Luxembourg (95%), the United Kingdom (94%) and the Netherlands (93%) are the countries with the highest share of passenger traffic in train-km.

4.4. Electrified train-km

Based on data reported by 22 countries in 2022, 78% of total traffic measured in train-km was electrified with eleven countries reporting the value of electrified train-km higher than the average, while twelve reported it to be lower. Sweden reported the highest proportion of electrified train-km at 99%, while Luxembourg (98%), Bulgaria (94%), Belgium (94%), Italy (91%) and Finland (90%) also reported a share of electrified train-km equal to or higher than 90% in their respective markets. In contrast, Latvia (36%), Estonia (24%), Ireland (14%) and Lithuania (13%) all reported proportions of electrified train-km as shares of total traffic below 50%.

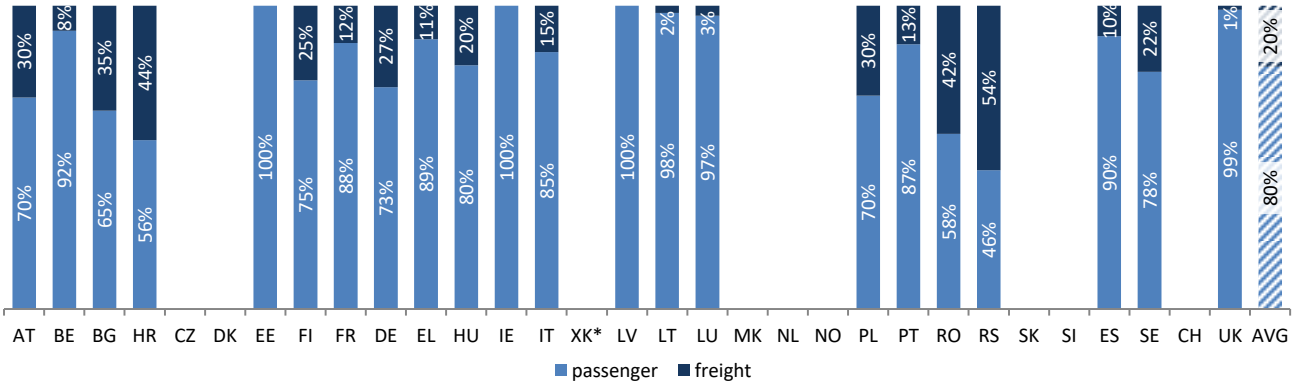
FIGURE 22 – ELECTRIFIED TRAIN-KM AND SHARE IN TOTAL RAIL TRAFFIC IN 2022



In 2022, the share of electrified train-km in passenger services accounted for 80% of the total train-km of the 23 countries which reported their figures. Electrified train-km in freight traffic on the other hand, made up on average the remaining 20%. The share of electrified train-km in passenger traffic ranges from 46% in Serbia to as much as 100% in Estonia, Ireland and Latvia. Several countries reported a share of electrified passenger train-km 90% or

higher, including Spain (90%), Belgium (92%), Luxembourg (97%), Lithuania (98%), the United Kingdom (99%), Estonia (100%), Ireland (100%) and Latvia (100%). In total more than half of the participating countries report a share of electrified train-km in passenger services equal to or higher than the average, while nine countries report levels lower than the average. Croatia (56%) and Serbia (46%) report the lowest shares of electrified train-km for passenger services.

FIGURE 23 – BREAKDOWN OF ELECTRIFIED TRAIN-KM IN 2022 IN PASSENGER AND FREIGHT SERVICES



On the flip side, Serbia (56%) stands out as the only country where the share of electrified train-km in freight traffic exceeds that in passenger services. Following closely are Croatia (44%) and Romania (42%), each reporting a share of electrified train-km in freight above 40%. In contrast, the United Kingdom (1%), Lithuania (2%), Luxembourg (3%) and Belgium (8%) reported the lowest shares of electrified freight traffic in train-km. The countries with a full share of their electrified train-km in passenger rail, also do not report any share of electrified train-km in freight rail.

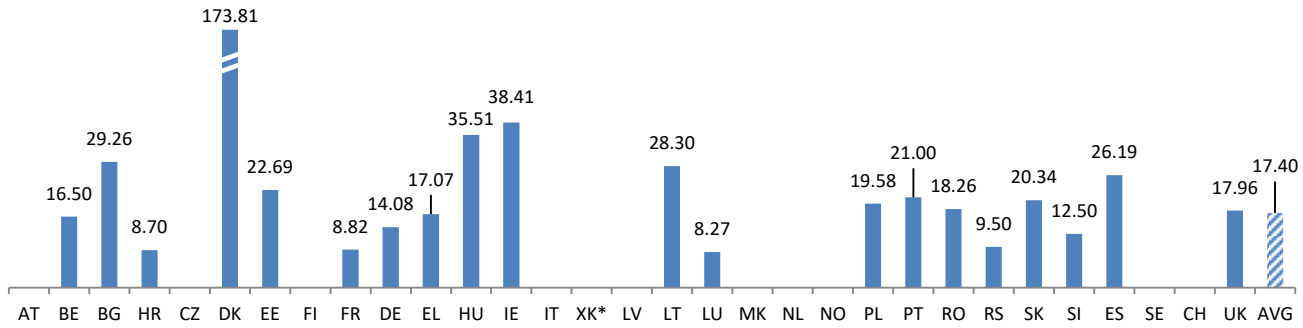
4.5. Railway undertakings' spendings on energy

In 2022, railway undertakings paid more than €17 cent per kWh on average (Figure 24). Compared to 2021, this is a substantial increase of 33%[16]. Spendings on electricity vary a lot across member countries, ranging from below €10 cent (in Luxembourg, Croatia, France and Serbia) to above €1.7 per kWh (in Denmark) in 2022. However, all countries (except Bulgaria, -15%) recorded a large rise in spendings per kWh from 2021 to 2022. In particular, RU's spendings per kWh more than tripled in Hungary (+258%) and Lithuania (+229%), and more than doubled in Portugal (+102%).

[16] The comparison is done on countries reporting data for both years only, which is slightly different from the sample presented in Figure 24.

FIGURE 24 – RAILWAY UNDERTAKINGS' SPENDINGS PER KWH IN 2022[17]

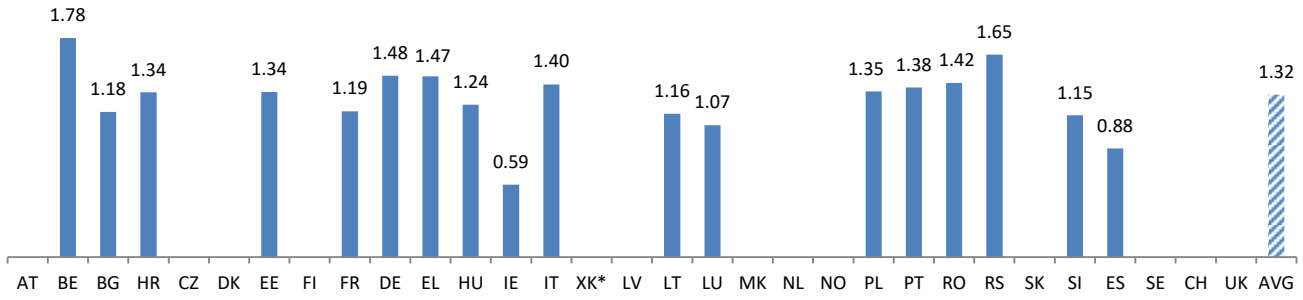
(in Eurocent)



Regarding spendings on fuel, railway undertakings paid more than €1.3 per litre on average in 2022 (Figure 25). Similar to spendings on electricity, spendings on fuel recorded a year-on-year surge of 42%[18]. Spendings on fuel seem more homogenous across member countries, ranging from €0.6 (in Ireland) to €1.8 per litre (in Belgium) in 2022. All countries (except Bulgaria, -19%) reported a large increase in spendings per litre of fuel from 2021 to 2022. Portugal (+166%) saw the largest increase in spendings per fuel. In total, the rise in spendings on fuel was above the average (+42%) in eight countries.

FIGURE 25 – RAILWAY UNDERTAKINGS' SPENDINGS PER LITRE OF FUEL IN 2022

(in Euro)



In 2022, spendings on energy (fuel and electricity) accounted for 9%, on average, of railway undertakings' revenue (Figure 26). Spendings on electricity represent 78% of total energy spendings, in line with the share of electrified train-km in total traffic (see section 4.4). While this comparability is mostly observed across countries, in some countries, the share of spendings on electricity is disconnected from the share of electrified train-km. For instance,

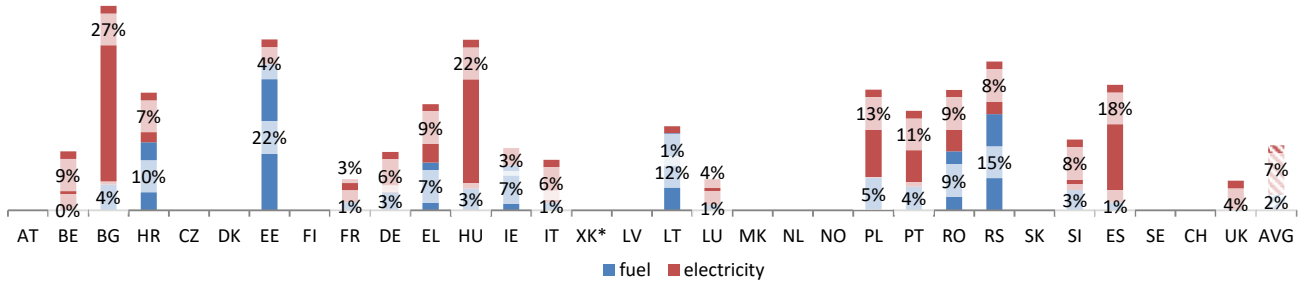
[17] The average value in this graph differs from the one in the Main Report since the sample is different: this one includes all the available data for 2022 while in the Main Report it includes only the countries which provided data for the 2019-2022 period.

[18] The comparison is done on countries reporting data for both years only, which is slightly different from the sample presented in Figure 25.

in Croatia, 61% of traffic is electrified but only 42% of energy spendings are on electricity. Meanwhile, in Spain, 87% of traffic is electrified but spendings on electricity represent up to 95% of energy spendings.

Compared to 2021, the share of energy spendings in RU's revenue rose by 2 percentage points. Hungary saw the largest increase (+16 percentage points), followed by Estonia (+8 points), Spain and Portugal (both +5 points).

FIGURE 26 – SHARE OF ENERGY SPENDINGS IN RAILWAY UNDERTAKINGS' REVENUE IN 2022



05

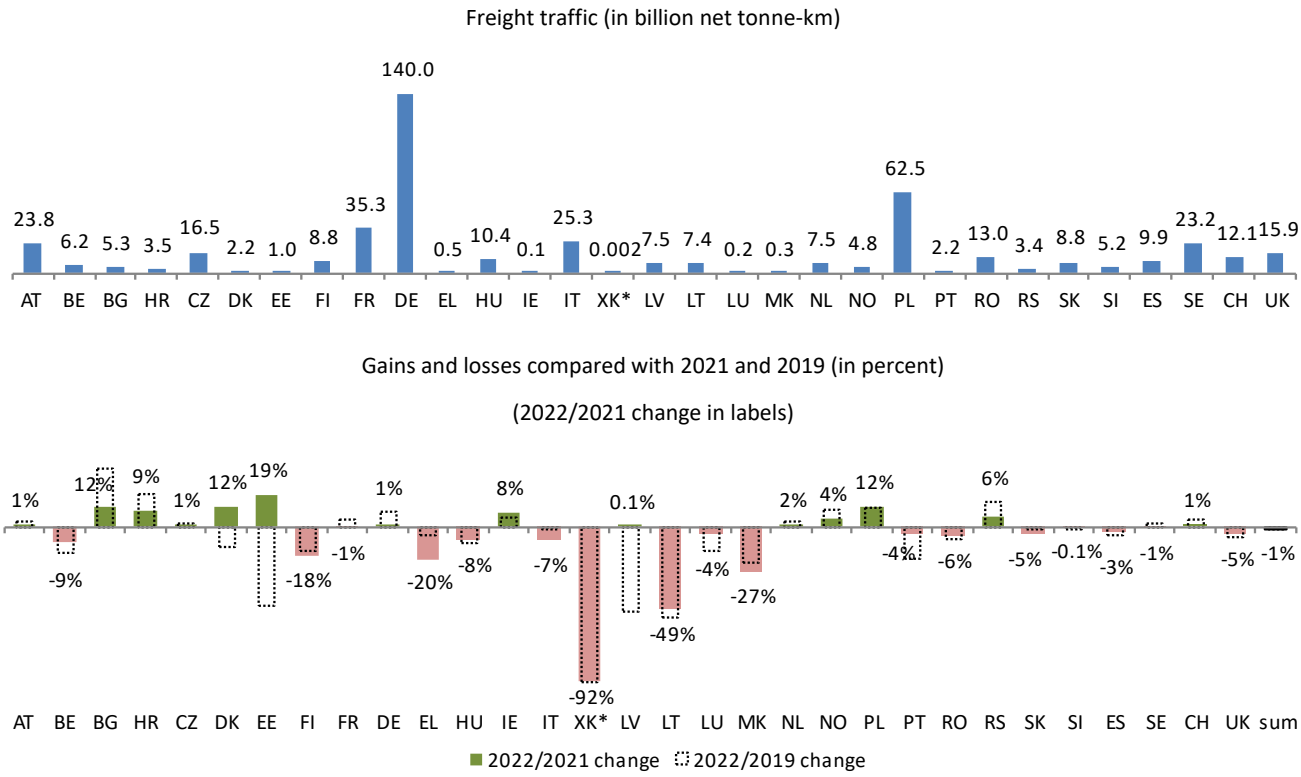
The rail freight market

5.1. Rail freight market size

In 2022, the global rail freight market in IRG-Rail member countries amounted to 463 billion net tonne-km. This is a decrease (-1%) compared with 2021 but a return to the level of 2019. Germany has the largest freight market with 140 billion net tonne-km, representing 30% of the global freight market in IRG-Rail member countries. Poland and France ranked second and third, respectively representing 14% and 8% of the market, and cumulated together with Germany half of the European net tonne-km.

Most IRG-Rail members reported a decrease in demand for rail freight services in 2022 in comparison with 2019 (18 countries), as well as 2021 (17 countries). Unfortunately, the recovery of the rail freight market that was recorded after the COVID-19 pandemic in 2021 did not continue in 2022. Bulgaria and Croatia experienced the biggest increases compared with 2019 (+35% and +19% in net tonne-km respectively). This can be explained by the favourable geographical position of these countries and the increased transit of goods to Adriatic and Black Sea ports during the pandemic and the war in Ukraine.

FIGURE 27 - RAIL FREIGHT TRAFFIC IN 2022 AND CHANGE SINCE 2019



Kosovo reported the biggest decreases in rail freight traffic (-92%) compared with 2019 and 2021 (see Figure 27). This decrease can be attributed to two key factors. Firstly, the rehabilitation of the crucial railway line between Fushë Kosovë and Hani i Elezit which is the sole exit route for Kosovo and plays a vital role in freight transport. The

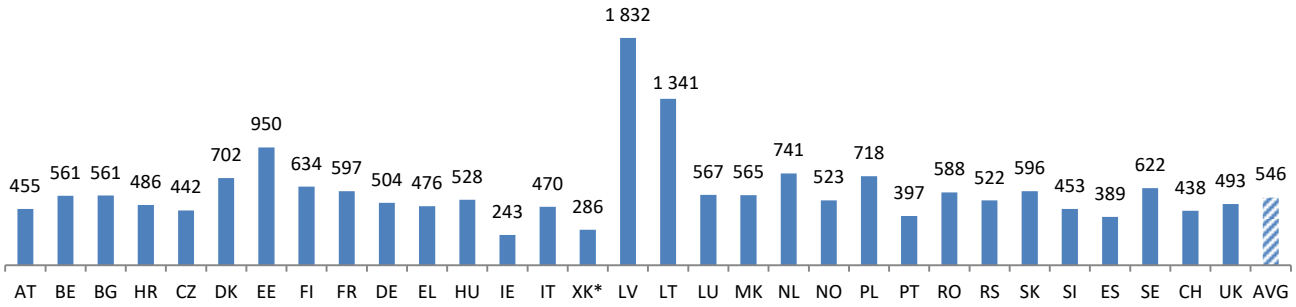
rehabilitation efforts caused numerous disruptions in freight transport during an extended period. Secondly, the metallurgical giant Ferro-Nickel, a major client of rail freight operators in Kosovo, stopped its activities in 2022, significantly downsizing the volume of freight transport.

Lithuania, Latvia and Estonia also recorded large decreases in rail freight traffic (-54%, -50% and -48% respectively) compared with 2019. These significant decreases for the Baltic states are a consequence of the decisions of Russia and Belarus to redirect the flow of transit cargo from the seaports of Baltic countries to Russian ports or other alternative freight routes.

As in previous years, Lithuania and Latvia reported the highest freight load factor (the number of net tonne-km per freight train-km, see Figure 28), whereas Ireland, reported the lowest number. For Lithuania and Latvia, this can be explained by structural factors: in Baltic states, the conditions of rail infrastructure and station access roads have been designed to accommodate longer trains (combined with a broad-gauge infrastructure (1,520mm)).

FIGURE 28 - FREIGHT TRAFFIC LOAD IN 2022

(in tonne-km per freight train-km)

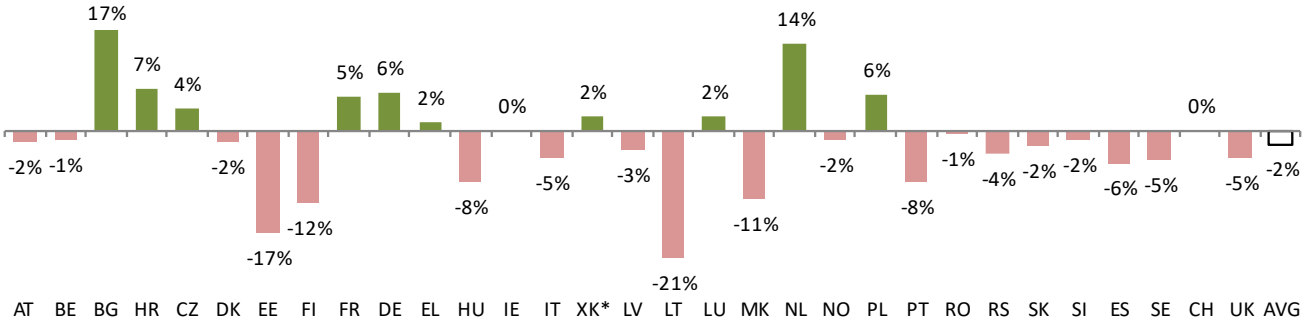


Significant changes regarding the average load per train since 2018 can be observed in Figure 29. On average, the load factor decreased by 2% over the last five year. In Lithuania and in Estonia in particular, the load factor decreased by -21% and -17% respectively. Freight traffic in Lithuania was affected by the sanctions against Belarus and the war in Ukraine. A large part of the freight consisted of international transport from Belarus, so the use of the infrastructure was affected when the sanctions came into force. It was the main reason for significant changes in the load factor and freight traffic.

On the contrary, Bulgaria reported increase of 17% in the load factor from about 481 tonne-km per train-km in 2018 to 561 in 2022. This can be explained by the significant increase in the net tonne-km in 2022 compared to 2018 (+36%), amid the smaller increase in train-km from 2018 to 2022 (+17%). The increase in net tonne-km in Bulgaria in 2022 compared to 2018 applied for all components of rail freight transport - national, international import, international export and transit.

FIGURE 29 - FREIGHT TRAFFIC LOAD CHANGE OVER FIVE YEARS

(gross change of the load factor between 2018 and 2022, in percent)

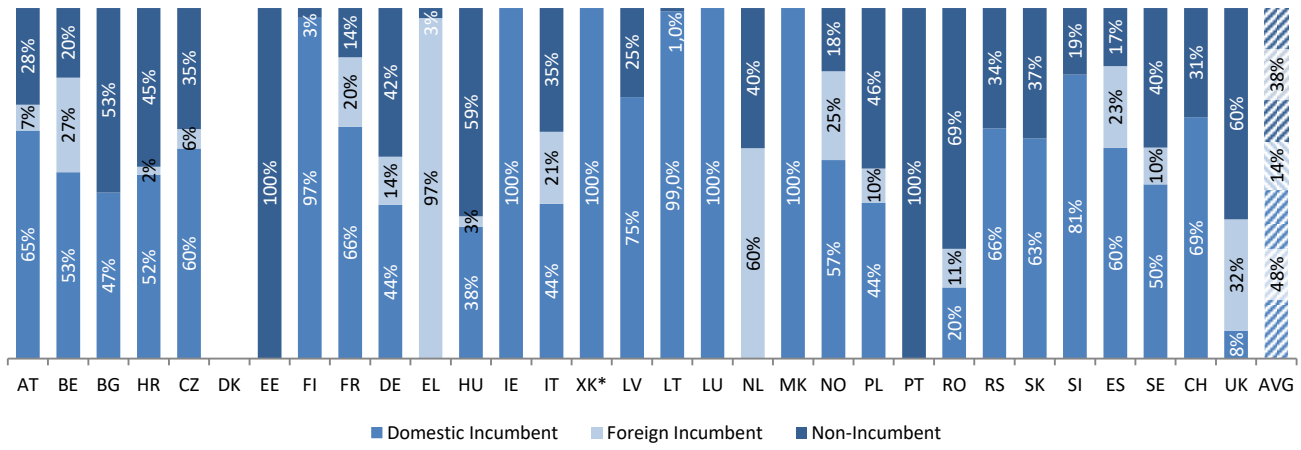


5.2. Market shares of freight railway undertakings

The two figures below show the market shares of three categories of freight railway undertakings (domestic incumbents, foreign incumbents and non-incumbents), considering freight train-km and net tonne-km, respectively. In 19 countries, the majority share of the freight market measured in freight train-km was operated by domestic incumbents. This was the case for 18 countries in terms of net tonne-km. In 2022, domestic incumbents represented 48% of traffic (in train-km as in net tonne-km) on average. This represents a drop of 5 percentage points for train-km and for tonne-km, each compared with 2019.

FIGURE 30 - MARKET SHARES OF FREIGHT RAILWAY UNDERTAKINGS IN 2022 (BASED ON TRAIN-KM)

(in percent)



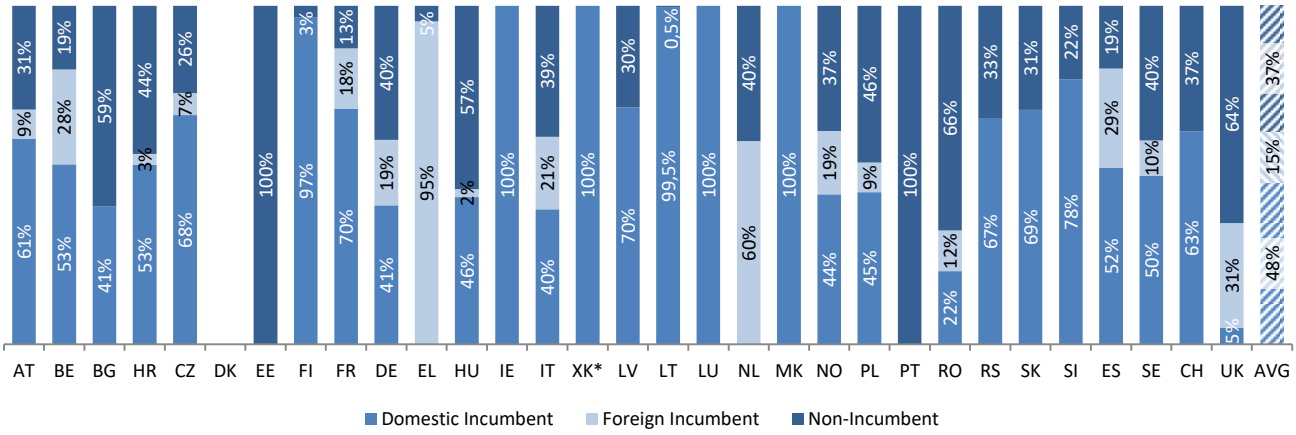
In 2022, four countries (Ireland, Kosovo, Luxembourg and North Macedonia) continued to show a monopoly situation for the domestic incumbent in their rail freight market. In Finland and Lithuania, the domestic incumbent

railway undertakings continue to operate nearly 100% of the market. On the other hand, rail freight transport was exclusively operated by non-incumbents in Estonia and Portugal. Bulgaria, Hungary, Romania and the UK reported market shares of non-incumbents equal to or above 50%.

In 2022, there was an increase in the share of competitors (foreign incumbents and non-incumbents) for freight train-km in 20 countries compared to 2019.

FIGURE 31 - MARKET SHARES OF FREIGHT RAILWAY UNDERTAKINGS IN 2022 (BASED ON NET TONNE-KM)

(in percent)



5.3. Economic performance of freight railway undertakings

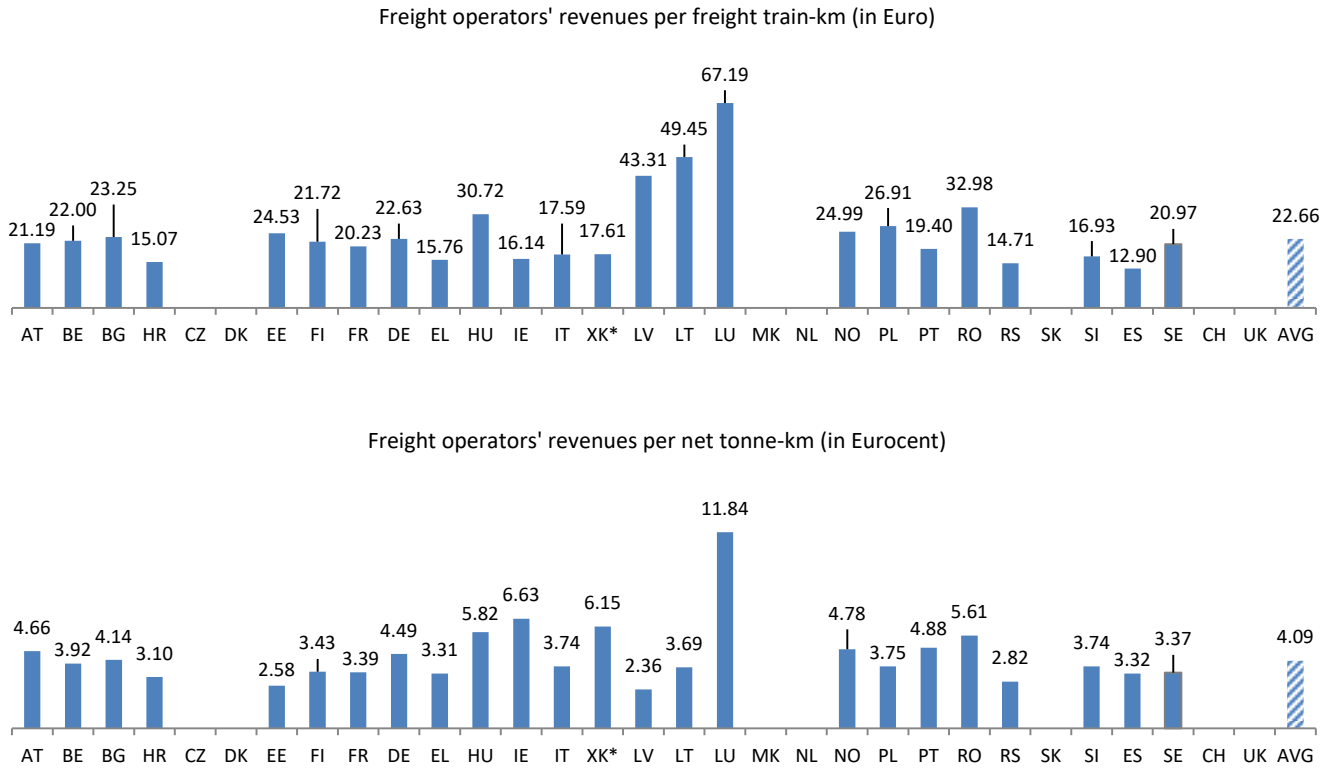
In 2022, the average revenue per freight train-km was €22.66[19], which is an increase of 7% compared with 2019. Compared to 2021, the unit revenue rose by 9% in 2022, which is comparable to the average inflation rate in IRG-Rail countries. The highest revenue per freight train-km (€67.19) was, as in previous years, recorded for Luxembourg (see Figure 32). This can be explained by the very limited domestic market and country size as well as by the absence of new RUs on the market.

Significant increases in freight revenue per train-km were reported by Bulgaria (+59% and +44% compared to 2019 and 2021 respectively) and Hungary (+53% and +28%). The increase of freight revenues in Hungary is a consequence of the increase the traction energy prices and the difference the Forint/Euro exchange rate. The increase the traction energy prices caused an increase the price of goods transportation, which was reflected in the increase the company's revenues. On the other hand, revenue per freight train-km dropped significantly in Estonia (-29% and -16% compared to 2019 and 2021 respectively). The reason for this decrease in freight revenue in Estonia is decreased volumes of goods, mainly due to the interruption of transit of Russian fertilisers and

[19] Value computed on the more complete panel of reporting countries for 2022 (23 countries). The difference with the statistic mentioned in the Main Report is explained by the reduced panel of countries included for the historical period of five years presented.

chemical products and Belarussian oil products as a result of sanctions imposed on these countries. Ireland also showed a drop in revenue per freight train-km of 40% when compared to 2019, however 2019 was an outlier year for Ireland due to works which required some rail freight services to be replaced by road haulage for 6 months. When compared with 2021 figures, Ireland had a 24% increase. Overall, compared to 2021, 20 countries out of 24 recorded an increase in freight revenue per train--km, of which 11 countries saw an increase of 10% or above. High inflation, especially high energy prices, should have played a crucial role in this development.

FIGURE 32 - FREIGHT RAILWAY UNDERTAKINGS' REVENUES PER TRAIN-KM AND NET TONNE-KM IN 2022



Freight revenue per net tonne-km was 4.09 Eurocent on average in 2022, up 9% from 2019 and 13% from 2021 (higher than the average inflation rate of 8.5%). The lowest revenue per net tonne-km was recorded for Latvia (2.36 Eurocent/net tonne-km) and the highest in Luxembourg (11.84 Eurocent/net tonne-km). Compared to 2019, only Austria reported a decrease (-3%) in revenue per net tonne-km. The biggest increases were shown by Hungary (+65% and +42% compared to 2019 and 2021 respectively) and Lithuania (+43% and +44%). In Hungary, the observed increase in revenue per train-km is consistent with the increase in revenue per tonne-km. Compared to 2021, 21 countries out of 24 recorded an increase in freight revenue per net tonne-km, of which 15 countries showed a rise of at least 10%.

Specific caution should be exercised when reading the revenue of railway undertakings and benchmarking levels and changes per country. All financial indicators are presented in Euro for all countries, but without inflation adjustment, which could only partially explain the changes observed. Besides, the type of goods transported may be quite different across countries. Indeed, heavier trains can especially be found in some countries where the

most common goods transported are iron ore or coal, while lighter trains prevail in countries with a high share of intermodal transport. The typology of goods transported by freight services per country may consequently affect the average indicator of revenue per net tonne-km. In addition, railway undertakings may use different approaches to calculate the transport costs they charge their clients (giving more emphasis to the weight of goods or to the transport distance), which alters the calculation of freight revenue.

5.4. Freight train punctuality

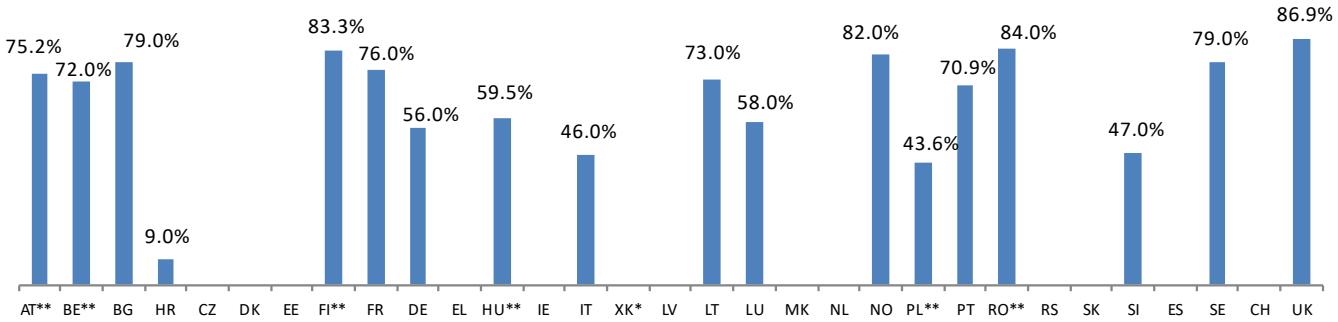
In 2022, the United Kingdom and Norway had the highest freight train punctuality (considering a delay of up to 15 minutes 0 second as an on-time train). On the other hand, the lowest rate of punctuality of freight trains was recorded in Croatia at only 9% (see Figure 33). The main reasons for this in Croatia were:

- 14% attributed directly to the IM – primary delays (e.g. waiting for a permission, restricted speed, track closures for regular maintenance),
- 27% attributed directly to the RU – primary delays (e.g. waiting for a locomotive from the depot, waiting for the staff of the RU, waiting for the train composition),
- 17% attributed directly to the external influence – primary delays (e.g. train received late from other IM or refused train reception from other IM),
- 42% attributed to a third-party – secondary delays (e.g. waiting for a locomotive, waiting at junction).

In Croatia, due to the above and long-term construction works on the railway infrastructure that were not completed within planned deadlines, low punctuality of freight trains can be expected in the future as well. It is also important to point out that a direct comparison of freight train delays by country is not entirely possible due to the different thresholds that countries have, e.g. 60 min 0 sec in Romania, 30 min 0 sec in Austria, Belgium and Hungary, 15 min 59 sec in Poland and 15 min 29 sec in Finland.

FIGURE 33 - FREIGHT TRAIN PUNCTUALITY IN 2022

(percent of freight trains arriving on time at 15 minutes 0 second)



** Different thresholds apply: 60 min 0 sec (RO), 30 min 0 sec (AT, BE, HU), 15 min 59 sec (PL), 15 min 29 sec (FI)

More than half of 18 reporting countries saw a deterioration of freight train punctuality (see Figure 34). The biggest change was recorded in the United Kingdom and Bulgaria. While the freight train punctuality decreased by 7 percentage points in United Kingdom, it increased by 11 percentage points in Bulgaria in 2022 compared to 2021.

FIGURE 34 - FREIGHT TRAIN PUNCTUALITY – 2022/2021 CHANGE

(in percentage points)

06

The rail passenger market

6.1. Rail passenger market size

In 2022, total passenger-km across 31 countries was 461 billion. Germany and France had the largest rail passenger markets at 95 billion passenger-km each, followed by the UK (51bn) and Italy (45bn). Together, these four countries represent 62% of the overall market. All countries reported increases in passenger traffic in 2022 compared with the previous year. The total increase across all monitored countries was 52%. Passenger traffic (passenger-km) in both Serbia (+126%) and Ireland (+101%) more than doubled while other notable increases were observed in North Macedonia, Greece and Italy. In Serbia, a new railway line between Belgrade and Novi Sad opened in March 2022 with up to 64 passenger train departures per day. The popularity of this new line explains why Serbia showed a large increase in passenger traffic in 2022 compared with 2021.

While many reporting countries showed significant yearly increases in passenger traffic, many are still below pre-pandemic levels of 2019. Those with the greatest year-on-year increase in traffic often remained below 2019 levels overall, including Ireland, North Macedonia and the UK. Serbia's large increase in traffic in 2022 saw total passenger-km not only exceed pre-pandemic levels but show the greatest relative increase on 2019 levels among reporting countries (+50%). Overall, total passenger-km remains 10% below 2019 levels.

FIGURE 35 - RAIL PASSENGER TRAFFIC IN 2022 AND CHANGE SINCE 2019

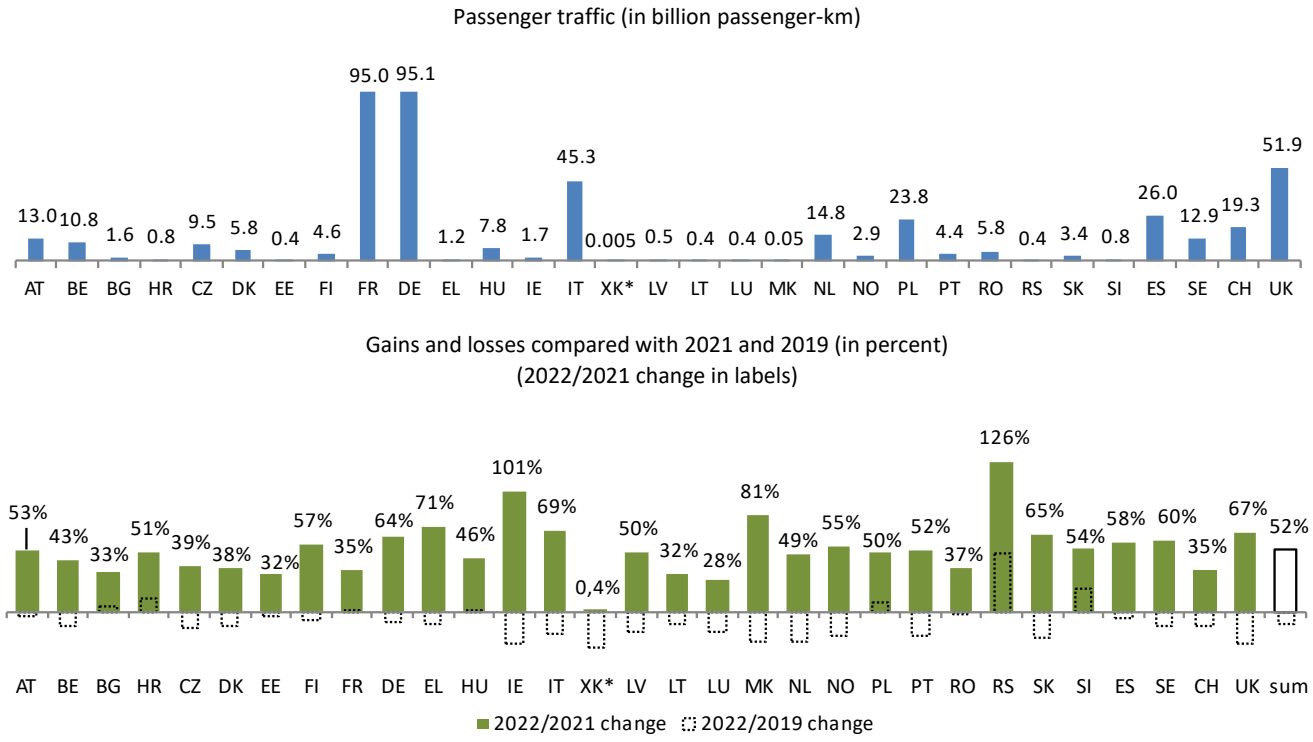


Figure 36 below shows how many kilometres, on average, an inhabitant travelled by train in monitored countries in 2022 (obtained by dividing passenger-km by population). There is still substantial variation between countries, ranging from 3 km per inhabitant in Kosovo to 2,195 km per inhabitant in Switzerland. Across all reporting countries, an average inhabitant travelled 859 km.

As in previous years, Switzerland continues to show the highest number in terms of passenger-km per inhabitant. The next highest were France, Austria and Sweden. Most countries have shown an increase in passenger-km per inhabitant compared with 2021, but levels are still below the level observed for 2019.

FIGURE 36 - PASSENGER-KM PER INHABITANT IN 2022

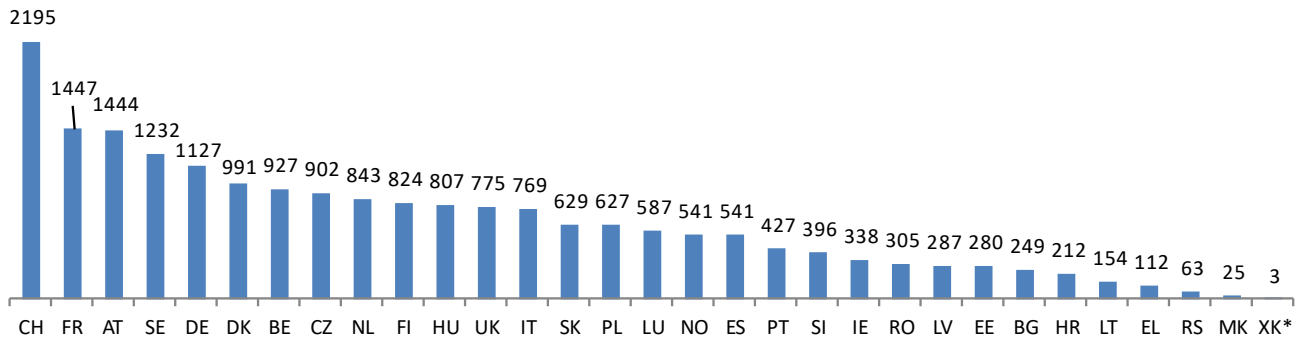
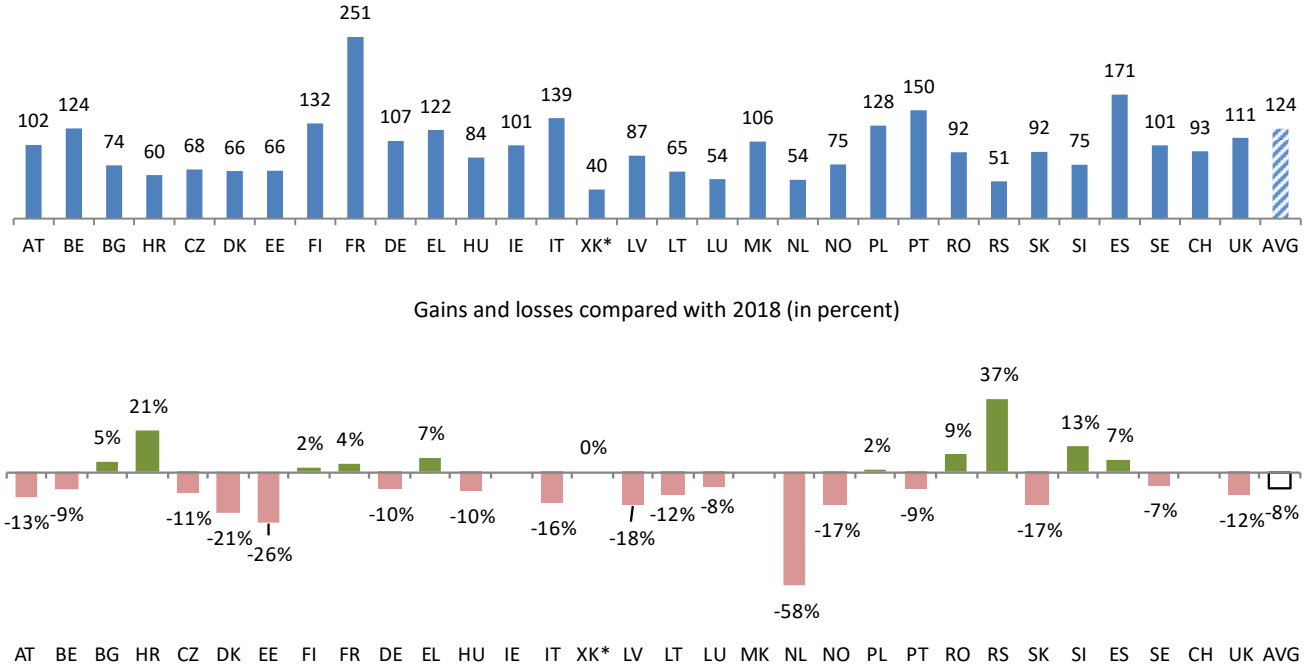


Figure 37 shows the passenger load factor for each monitored country. It is calculated by dividing total passenger-km by total passenger train-km. This indicator differs from the occupancy rate. The former is not only affected by the occupancy rate but also by carrying capacities (i.e. number of seats per train).

In 2022, France showed the highest passenger-km per passenger train-km, followed by Spain, Portugal, and Italy. France's value was more than double the average of all monitored countries. This can be attributed partly to the much greater capacity of its high-speed services compared with other European countries and the large share of these services (64%) in French passenger market. The largest changes compared with 2018 were in the Netherlands (-58%) and Serbia (+37%).

FIGURE 37 - NUMBER OF PASSENGER-KM PER TRAIN-KM IN 2022 AND CHANGE OVER 5 YEARS



The load factor also varies widely between PSO and non-PSO services, being three times higher for the latter (on average 96 passengers for PSO services and 289 for non-PSO services). As in 2021, there was far less variation in PSO load factors across monitored countries than for non-PSO services (Figure 38 and Figure 39).

FIGURE 38 - NUMBER OF PASSENGER-KM PER TRAIN-KM IN 2022 – PSO SERVICES

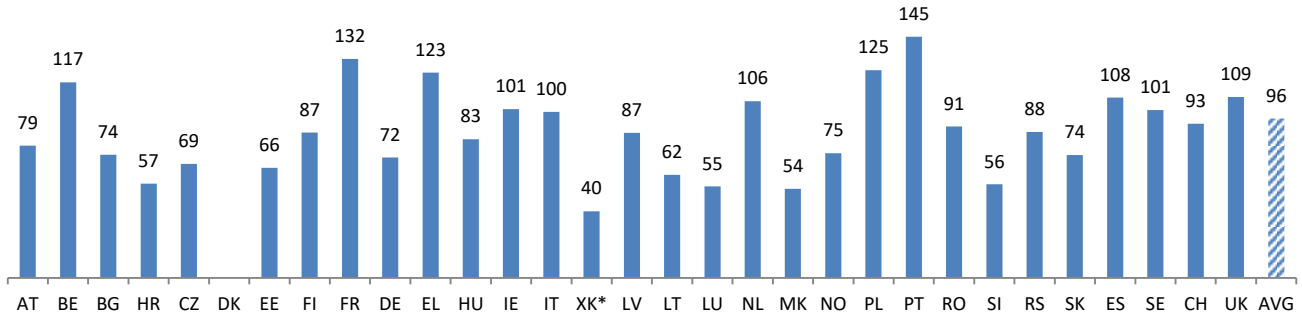
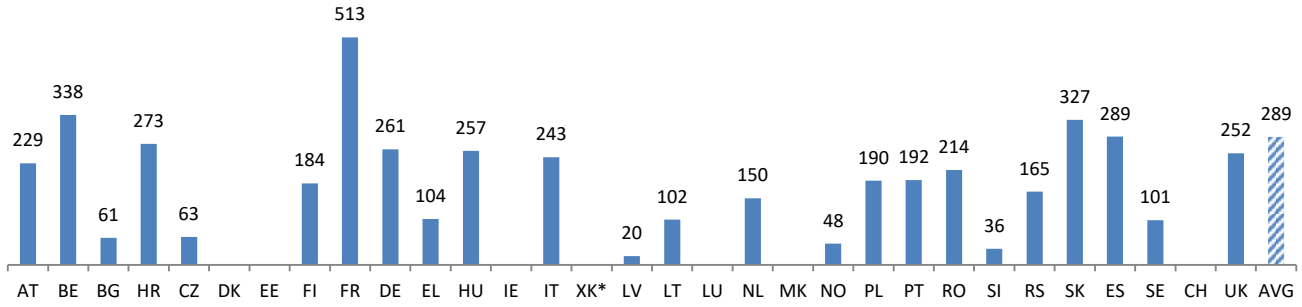


FIGURE 39 - NUMBER OF PASSENGER-KM PER TRAIN-KM IN 2022 – NON-PSO SERVICES

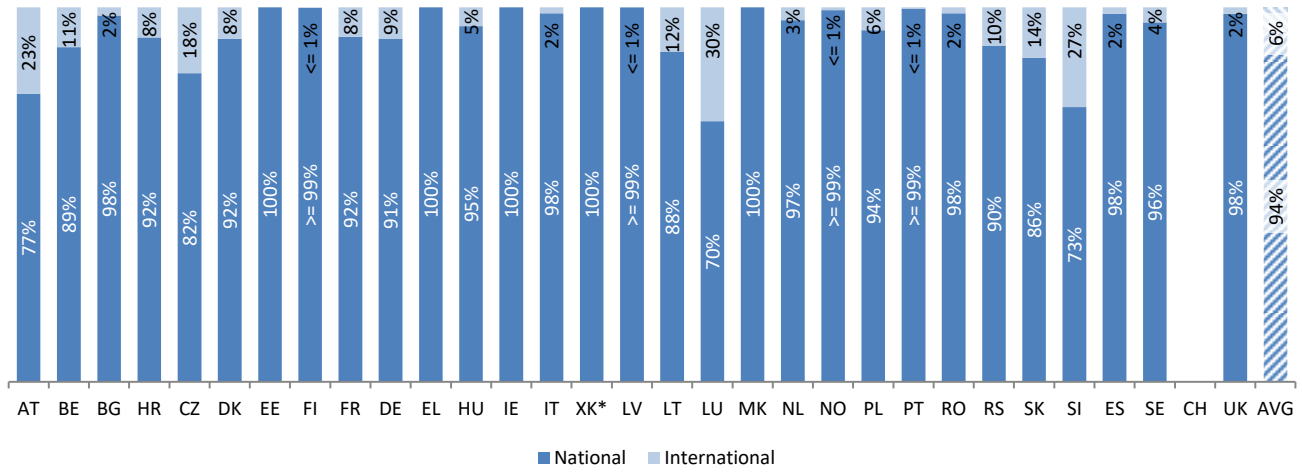


6.2. National and international passenger traffic

During the COVID-19 pandemic, many countries introduced cross-border travel restrictions which severely affected international passenger traffic. Figure 40 shows the share of national and international traffic across monitored countries in terms of passenger-km for 2022. The average share of international traffic increased to 6% with 94% of all traffic coming from national services. Compared with 2021, international traffic increased by 2 percentage points (from 4%), returning to 2019 levels.

FIGURE 40 - NATIONAL AND INTERNATIONAL PASSENGER TRAFFIC IN 2022

(in percent, based on passenger-km)



The share of international traffic was below the average in 18 countries, with 5 countries reporting no international traffic at all during 2022 (Estonia, Greece, Ireland, Kosovo and North Macedonia). The highest share of international traffic was recorded in Luxembourg (30%) followed by Slovenia, Austria and Czechia.

6.3. Share of PSO and non-PSO services

Figure 41 shows the proportion of PSO and non-PSO services on the supply-side (train-km). Across monitored countries, PSO services accounted an average of 84% of all train-km in the passenger market.

In 2022, there were 15 countries where the share of PSO passenger train-km equalled or approximated 100%. Fourteen countries had a non-PSO share of 5% or more. Differences in proportion of PSO and non-PSO services in each country can be explained by different historical developments in the organisation of the rail transport market. PSO services can be organised at different geographic levels (regional or long-distance rail services) and by different organising authorities (local authorities or the State). Moreover, the liberalisation of rail transport has affected rail competition both among existing RUs and for aspiring entrants into the market. This had led to the development of new international or domestic open access services.

FIGURE 41 - SHARE OF PSO AND NON-PSO SERVICES IN 2022 (BASED ON TRAIN-KM)

(in percent)

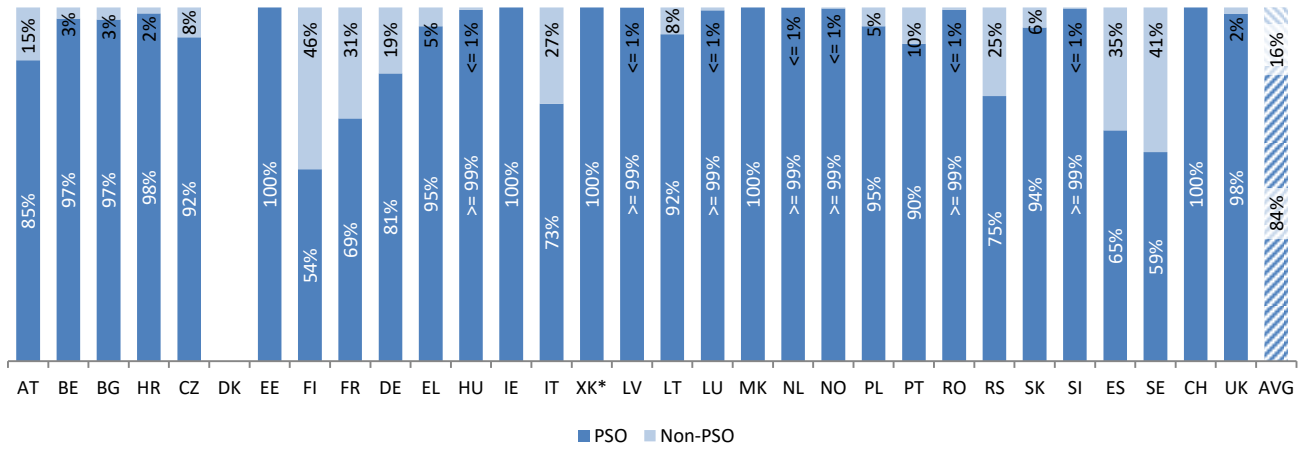
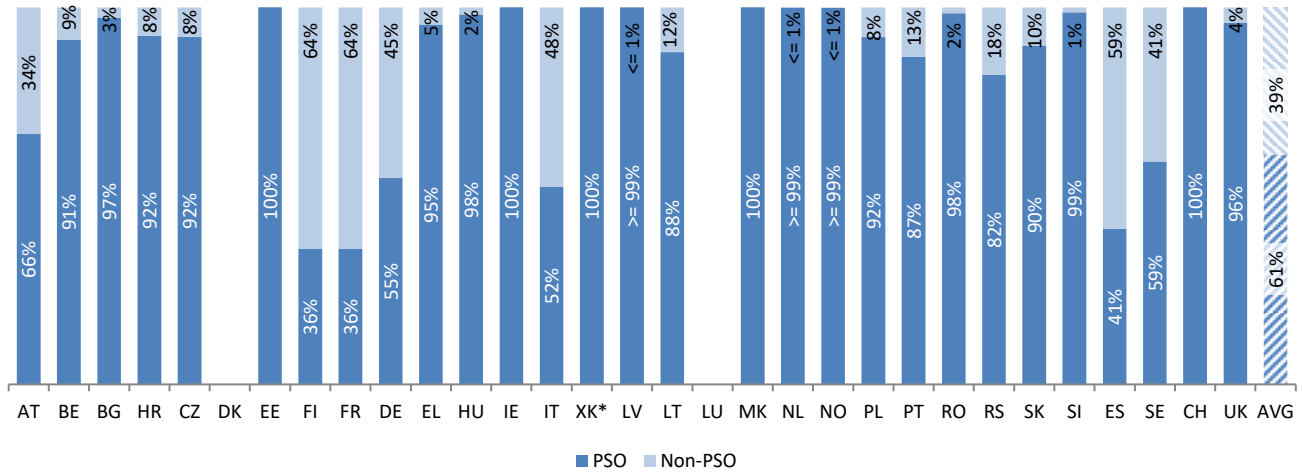


Figure 42 shows the proportion of PSO and non-PSO services on the demand-side (passenger-km). Across monitored countries, PSO services accounted for almost two-thirds (61%) of passenger-km on average. This represents a decline since 2021 (-6 percentage points) and is now below the level observed in 2019.

FIGURE 42 - SHARE OF PSO AND NON-PSO SERVICES IN 2022 (BASED ON PASSENGER-KM)

(in percent)



Like the supply-side, there were 13 countries where the share of PSO passenger-km equalled or approximated 100%. In Austria, France, Finland, Germany, Italy, Spain and Sweden the share of PSO traffic on the supply side was larger than on the demand side. This can be explained either by differences between PSO and non-PSO services in seat capacities of trains (the fact that for these countries non-PSO trains would have higher capacity than PSO trains) or the usage and performance of train services in terms of occupancy rates or distances travelled by passengers.

6.4. Market shares of passenger railway undertakings

The market shares of incumbent and non-incumbent railway undertakings are an important indicator of the potential competitive advantages of incumbent operators and of the possible barriers to new market entrants. In 2022, the domestic incumbent was the only passenger railway operator in 10 countries, meaning there was no competition.

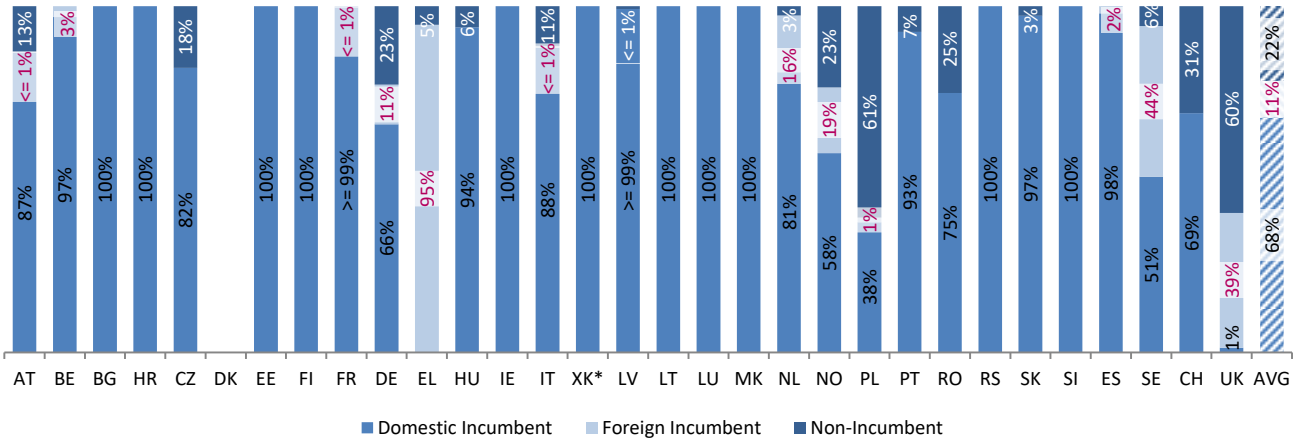
In Spain and France, the effective liberalisation of the domestic rail passenger transport market has introduced new competition from foreign incumbents' subsidiaries. In Spain, subsidiaries of the French incumbent and Italian incumbent have been operating in the Madrid-Barcelona and Madrid-Valencia corridors. Ouigo, a subsidiary of SNCF Voyageurs, reached a 12.5% share in the Spanish Madrid-Valencia corridor and a 26.4% share in the Madrid-Barcelona corridor. Iryo, partly owned by Italian incumbent Trenitalia, accounted for 0.3% of Madrid-Valencia traffic despite only operating 15 days on this route in 2022, and 1.2% of Madrid-Barcelona during a little month

of operation. In the French market[20], the Italian incumbent Trenitalia began operating passenger services between Paris and Lyon in mid-December 2021 but its market share has been quite limited.

Figure 43 shows market shares across monitored countries in passenger train-km. In 2022, the average market share of domestic incumbents was 68%. This was similar to 2021 (68%) and 2019 (67%). Domestic incumbents continued to dominate most markets, except in Poland, Greece and the UK.

FIGURE 43 - MARKET SHARES OF PASSENGER RAILWAY UNDERTAKINGS IN 2022 (BASED ON TRAIN-KM)[21]

(in percent)



On the demand side (passenger-km, Figure 44), domestic incumbents accounted on average for a market share of 76% of passenger-km (78% in 2021) and non-incumbents for 15% (14% in 2021). Foreign incumbents accounted for 9% (8% in 2021). This is broadly similar to the pre-pandemic share of 11% in 2019.

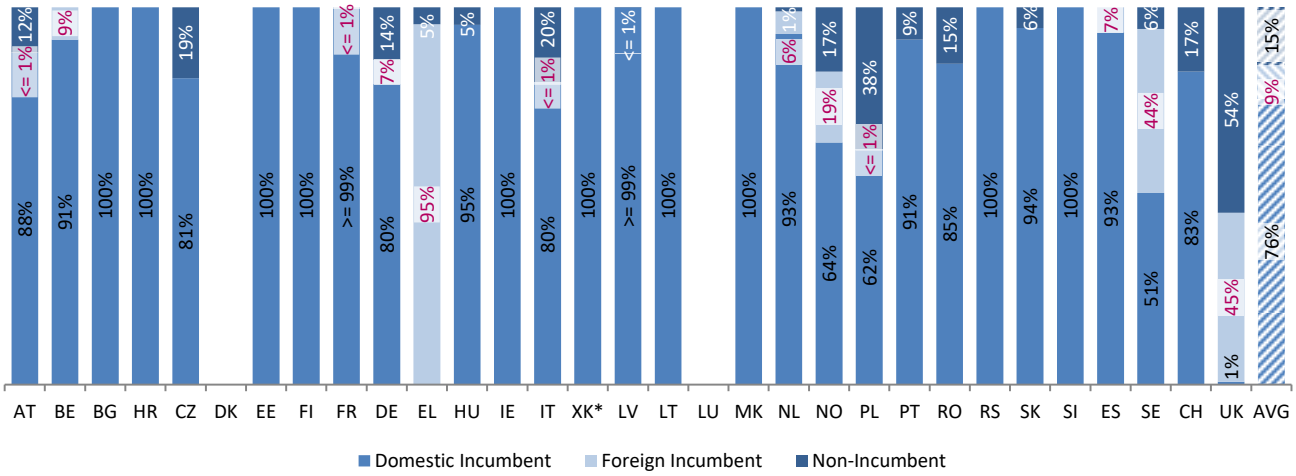
The UK, Norway, Poland and Sweden are the only countries where the market share of the domestic incumbent was below the average. It was zero for Greece where the former domestic incumbent was sold to the Italian domestic incumbent (in 2017). In the UK, the market share of the domestic incumbent accounted for only 1% of the market, as British railways were passed from government control to private companies more than two decades ago (in 1993). The only domestic incumbent is operated in Northern Ireland (Translink), which makes up only a small proportion (approximately 1%) of total passenger-km. In Norway, non-incumbents Go-Ahead and SJ Norge have operated after winning tenders for PSO contracts in December 2019 and summer 2020 respectively. They took over routes that the domestic incumbent used to operate, leading to the fall of the domestic incumbent's market share.

[20] Effective competition already existed in the French passenger market in 2020, restricted *de jure* to international activities and cabotage activities within international routes. Apart from international activities operated by the incumbent RU, its subsidiaries or with partnerships with other international railway undertakings, domestic competition was restricted *de facto* to a single cabotage route operated by Thello (former subsidiary RU of the Italian incumbent Trenitalia).

[21] The values for domestic and foreign incumbents include those of their subsidiaries, if any.

FIGURE 44 - MARKET SHARES OF PASSENGER RAILWAY UNDERTAKINGS IN 2022 (BASED ON PASSENGER-KM)[22]

(in percent)



6.5. Economic performance indicators of passenger railway undertakings

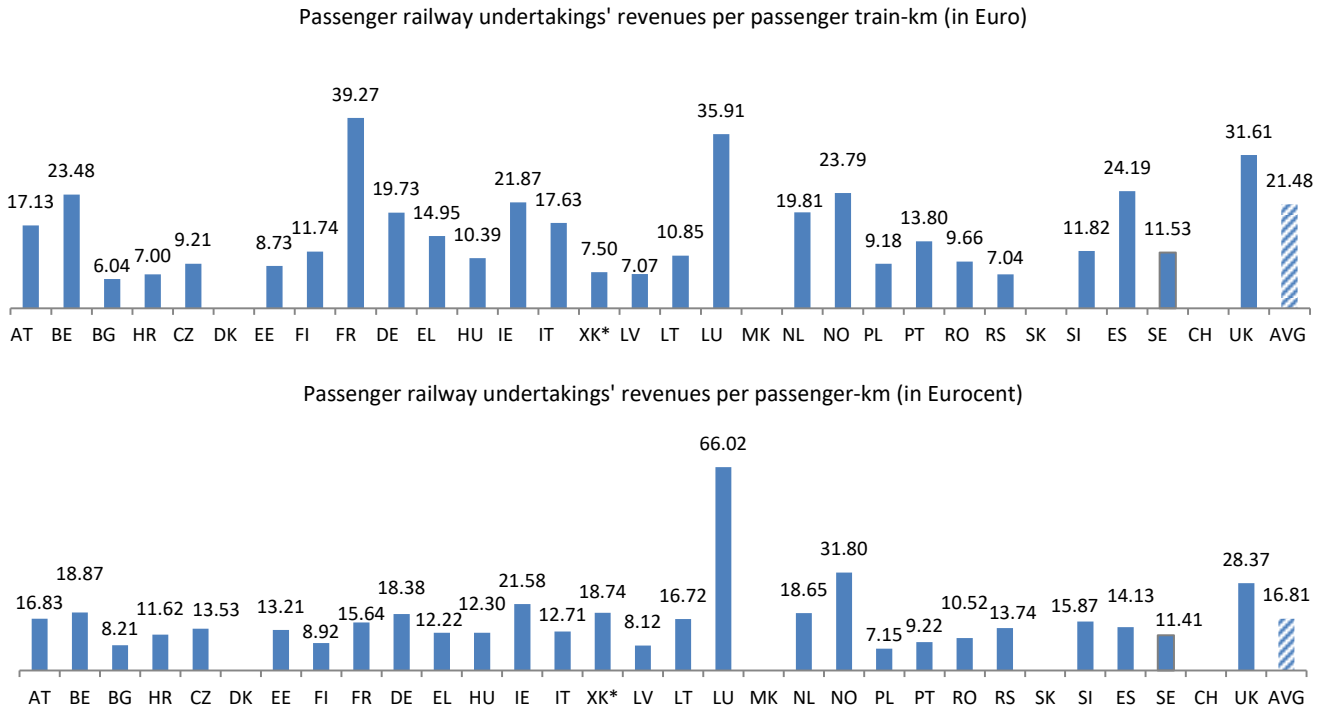
The revenue of passenger railway undertakings from fares and compensations was significantly affected by the consequences of the COVID-19 pandemic in 2020 and 2021. However, thanks to massive PSO compensations, the decrease in revenue was less than the significant fall in passenger-km observed across monitored countries, resulting in growth of both ratios of revenue per train-km and per passenger-km.

In 2022, alongside with the recovery in traffic, railway undertakings' revenue from passenger services began to regain its pre-pandemic features. The average revenue across monitored countries was €21.48 per train-km, 3% lower than in 2021 (€22.15 per train-km) but 6% higher than in 2019 (€20.34). The average revenue per passenger-km, after almost doubling from 2019 (13.88 Eurocent per passenger-km) to 2021 (25.74 Eurocent), fell by one third (-35%) to 16.81 Eurocent per passenger-km in 2022. This remains 25% above 2019 levels.

These recent changes in revenue per unit (decrease from 2021 but increase from 2019) are explained by the importance of public compensations: public subsidies represented 73% of PSO passenger revenue in 2021 (+28 percentage points in comparison with 2019) but only 46% of PSO passenger revenue in 2022. The total amount of PSO compensations was €27.8bn in 2022, falling by 38% in nominal terms from €44.8bn in 2021. The drop should even be sharper when accounting for inflation (8.5% on average in IRG-Rail countries in 2022).

[22] The values for domestic and foreign incumbents include those of their subsidiaries, if any.

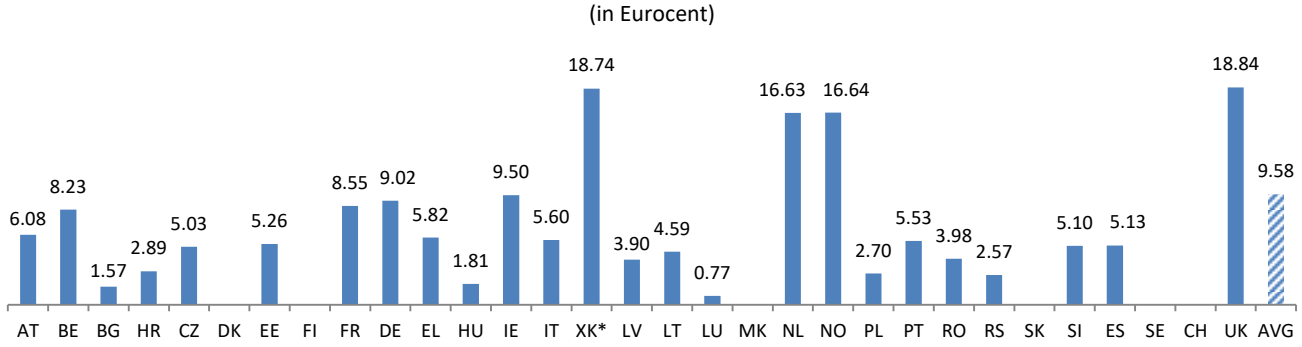
FIGURE 45 - PASSENGER RAILWAY UNDERTAKINGS' REVENUES PER TRAIN-KM AND PER PASSENGER-KM IN 2022



On the supply side, France had the highest unit revenues at €39.27 per passenger train-km followed by Luxembourg (€35.91) and the UK (€31.61). The lowest reported revenue per unit was Belgium at €6.04.

On the demand side, Luxembourg reported the highest revenues per unit at 66.02 Eurocent. This was more than double the next nearest country Norway (31.80), followed by the UK (28.37) and Ireland (21.58). The lowest reported revenue per unit was in Poland at 7.15 Eurocent.

FIGURE 46 - PASSENGER RAILWAY UNDERTAKINGS' PSO REVENUES FROM FARES IN 2022 PER PASSENGER-KM



On PSO revenue generated from fares only, the average revenue per passenger-km across monitored countries was 9.58 Eurocent. This represents an increase from 2021 (+2%) but a slight decrease from the level of 9.69 Eurocent reported in 2019 (-1%). The highest unit revenue was reported in the UK at 18.84 Eurocent, closely followed by Kosovo (18.74), Norway (16.64) and the Netherlands (16.63). The lowest reported PSO fare revenue was reported in Luxembourg at 0.77 Eurocent.

FIGURE 47 - BREAKDOWN OF PASSENGER RAILWAY UNDERTAKINGS' PSO REVENUES BETWEEN FARES AND COMPENSATIONS IN 2022

(in percent)

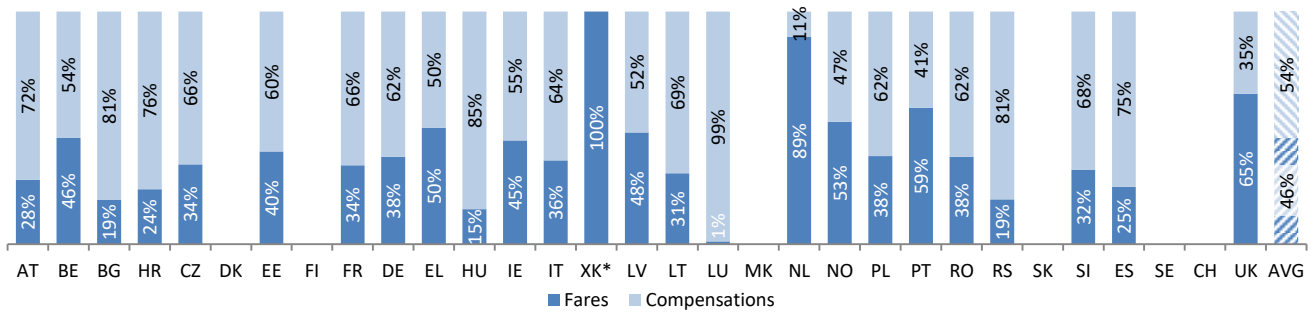


Figure 47 shows the distribution of PSO revenues generated from fares and compensations across selected countries. In 2022, the share of PSO revenues from fares increased to 46%, from 27% in 2021 but down from 56% in 2019. On average, around half of revenues came from fares, with the shares varying substantially across monitored countries. In Kosovo, all revenue was yielded from fares. Except for the Netherlands, Norway, the UK and Portugal, in all other responding countries PSO revenues generated from compensations were higher than those generated from fares. For instance, in Luxembourg, nearly all revenue (99%) was generated from compensations.

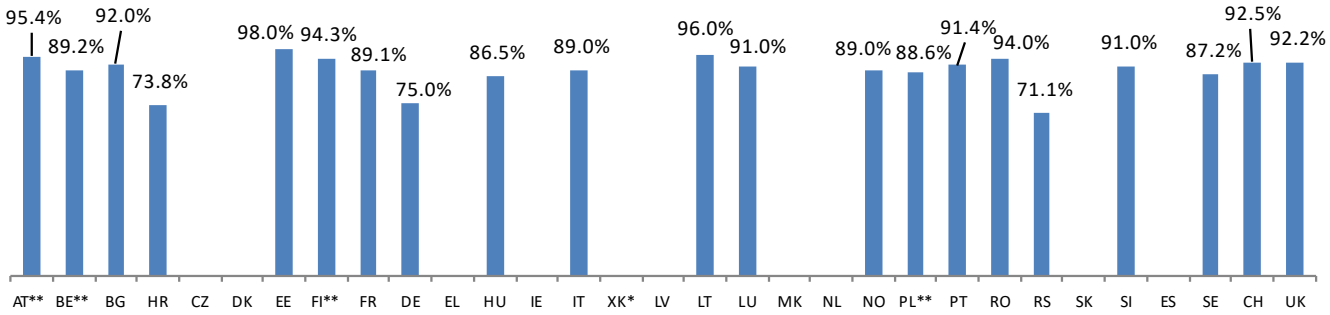
6.6. Passenger train punctuality

In 2022, Estonia had the highest rate of punctuality with 98% of passenger train services arriving within five minutes of the scheduled time[23]. Serbia had the lowest levels of punctuality among reporting countries at 71%. 19 out of 30 monitored countries reported data. In general, countries that reported lower freight punctuality tended to report lower passenger punctuality. This may reflect systemic issues, such as construction and maintenance work on the infrastructure or high network usage intensity. Most countries reported increased or similar levels of network usage intensity compared with previous years. For countries with higher usage intensity, there is likely to be greater degrees of reactionary delay, meaning that service delays are more likely to affect the punctuality of other services.

[23] Defined as within 5 minutes 0 seconds of scheduled times for most reporting countries except Austria and Finland (5min 29sec) and Belgium and Poland (5min 59sec).

FIGURE 48 - PASSENGER TRAIN PUNCTUALITY IN 2022

(percent of passenger trains arriving on time at 5 minutes 0 second)

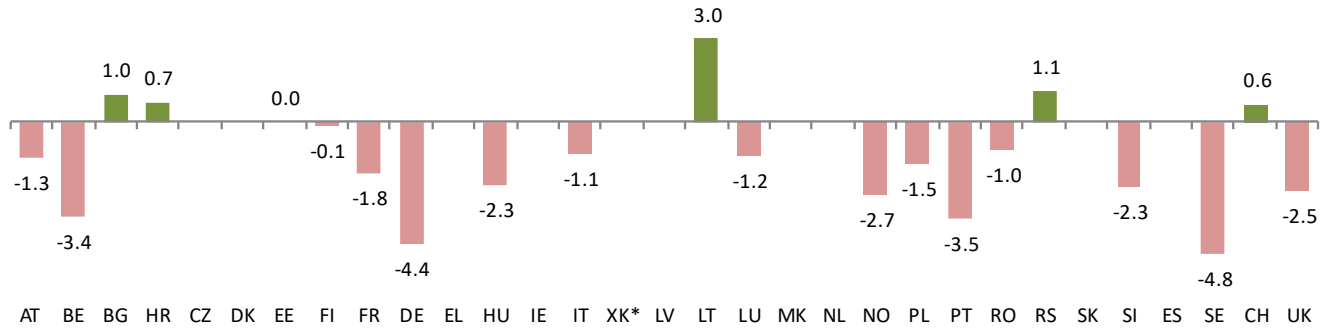


** Different thresholds apply: 5 min 59 sec (BE, PL), 5 min 29 sec (AT, FI)

Compared with 2021, most countries saw their passenger train punctuality deteriorate in 2022. The largest decrease was in Sweden at -5 percentage points (from 92% in 2021). In Germany, passenger train punctuality fell by 4 percentage points in 2022, especially affecting long-distance services. The main reasons were construction work on the infrastructure, increasing train density on a shrinking network with deteriorating quality, and staff shortages of train drivers and railway control centre staff. The largest increase in punctuality was in Lithuania at 3 percentage points (from 93% in 2021).

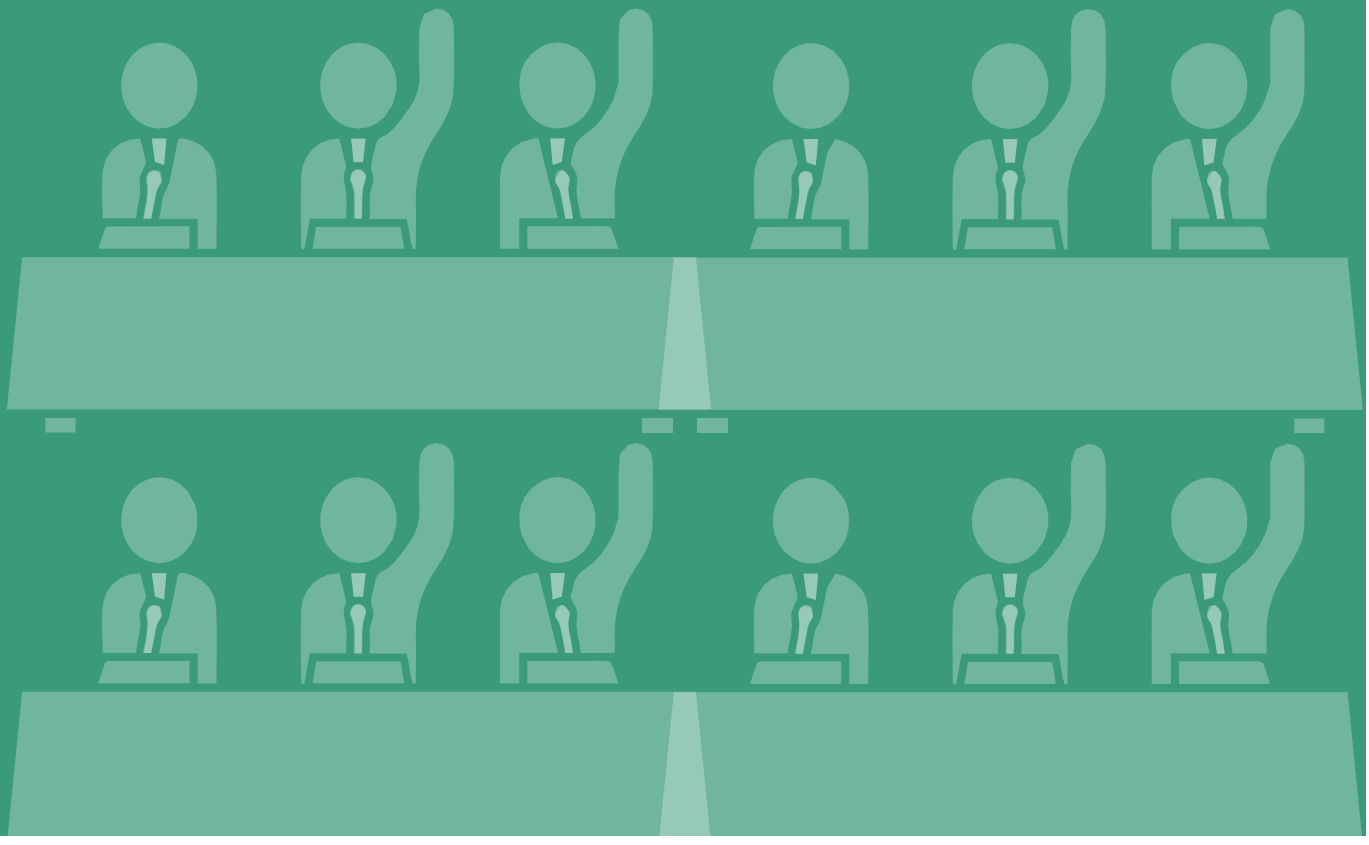
FIGURE 49 - PASSENGER TRAIN PUNCTUALITY – 2022/2021 CHANGE

(in percentage points)



07

Abstract of regulatory decisions in 2022



This section presents the full or main regulatory decisions taken by regulatory bodies per country in 2022: it includes the decisions either taken in or before 2022 and for which conclusions or effects appeared in 2022.

Austria

- The Schienen-Control Kommission (SCK) initiated a competition monitoring procedure after identifying disparities in transfer pricing. The fees varied depending on the railway undertaking requesting the service. The SCK examined whether this differentiation was objectively justified. It concluded that no objective justification could be ascertained and that the ban on discrimination entrenched in railway law had therefore been violated. In its decision of 23-02-2022, the SCK declared the fees charged for rolling stock inspection services null and void.
- The SCK dealt with two procedures initiated in response to complaints regarding the (non-)allocation of train paths for the 2023 timetable. The first procedure involved a complaint lodged by an RU against the allocation body (AB) on the grounds that its request for the allocation of train paths stopping at a specific railway station had been denied. The AB argued that the requested stop could not be assigned on grounds of operational quality. The SCK concluded that the train path requested, including the stop in dispute, could be configured with no loss of operational quality, particularly when the necessary travel time reserves were taken into account. It allocated the requested train path and stop to the railway undertaking in a decision announced on 21-09-2022.
- The second procedure involved an RU that had requested train paths for the summer of 2023 involving a detour rather than the RU's usual route. However, construction work is scheduled to take place on both routes during the period in question. The AB neither granted nor denied the RU's request. Following a series of verbal negotiations between SCK, AB, RU and Schienen-Control GmbH a configuration of train paths that were acceptable to the RU could be agreed upon.
- In a procedure in 2021, the SCK addressed the issue of train path conflicts in the timetable for 2022. The train paths requested by one RU conflicted with train path applications of another. The allocation body accordingly implemented a coordination procedure and developed two possible solutions. One of these proposed a modification to the train path applications requested by both RUs, the other a modification to the train paths requested by one undertaking only. The AB consequently adopted the first solution. The SCK dismissed an appeal by one of the RUs against this decision. (21-10-2022)
- In 2022, several railway undertakings notified the SCK of plans to operate new passenger service.

Belgium

- Mission of control on the absence of a conflict of interest with the Infrastructure Manager: beginning in 2022, there was no conflict of interest.
- Investigation of new passenger rail services, including the night train between Amsterdam and Barcelona with intermediate stops in Belgium: in 2022, no economic equilibrium test was requested.

Bulgaria

No key regulatory decisions in 2022.

Croatia

No key regulatory decisions in 2022.

Czech Republic

- Non-establishment of spin-off plants pursuant to Section 42c, paragraph 1 of the Act on Rail Systems by Czech Railways (České dráhy, a.s.) as railway carrier and railway operator. (03-11-2022)
- "The declaration on the 2022 and 2023 track issued by the Railway Administration (Main Infrastructure Manager) was in conflict with the Act on Railways, as it completely ignores the validity of the Treaty between the Republic of Austria and the former Czechoslovakia on the adjustment of the railway border crossing of 22 September 1962.
- The reason for the discrepancy was the failure to specify the second operating language (German)." (27-12-2022)
- The request to limit the operation of the railway for the year 2023 submitted by the Railway Administration (Main Infrastructure Manager) also contained items, the reason for which was the removal of the tracks, i.e. the permanent removal and cancellation of the railway. To this extent, the Office rejected the request, as activities related to the maintenance and repair of the track, as well as activities related to the construction of the track, will not be carried out for the necessary time. In such a case, it is not a restriction on the operation of the railway, which would meet the conditions of § 23b paragraphs 1 and 2 of Act No. 266/1994 Coll., on Rail Systems. (04-02-2022)

Denmark

- In September 2020, Jernbanenævnet started on its own initiative to supervise whether Banedanmark (IM) complied with the requirements in the channel allocation order - with a particular focus on the requirements regarding infrastructure overload (congestion). In summary, Banedanmark maintained against this background that it was not relevant to declare any parts of the infrastructure to be overloaded according to the provisions of the executive order.Jernbanenævnet considered the case at the board meeting on 10 February 2022 and after hearing Banedanmark, Jernbanenævnet announced by final inspection letter of 2 March 2022.
- At the end of 2021, Jernbanenævnet received inquiries from the Swedish supervisory body (Transportstyrelsen) concerning the potential coordination between Trafikverket (Swedish IM) and Banedanmark (Danish IM) regarding temporary capacity restrictions in the channel. Transportstyrelsen stated that Banedanmark had not met the requirements for coordination and notification, for instance in the total shutdown between Slagelse and Korsør from 17 July 2022 to 25 July 2022. This shutdown appeared in Banedanmark's Network Statement 2021 appendix 3.5A, but not in the appendix 3.5B , which lists capacity restrictions for timetable 2022. Against this background, Banedanmark is requested to coordinate with other affected infrastructure managers regarding the types of capacity restrictions

in a timely manner, publish the capacity restrictions no later than 24 months and 12 months before the timetable change, ensure that applicants and the most important managers of service facilities are consulted in a timely manner (04-05-2022).

Estonia

No key regulatory decisions in 2022.

Finland

- Finnish Rail Regulatory Body received a complaint from Destia Rail Ltd. (Safety Certificate Holder) on 24 November 2021 regarding the outsourcing of traffic control in railway yards to the incumbent RU (VR Group Ltd). The Finnish Rail Regulatory Body issued on 1 April 2022 a decision stating that the outsourced traffic control violates the breach of Section 108 of the Finnish Rail Transport Act (1302/2018) and Article 7c of the Directive (2012/34/EU) as regards those services that concern tracks outside the service facility. The Regulatory Body required the Finnish Transport Infrastructure Agency, the infrastructure manager, to rectify the situation so that it complies with the relevant legislation as soon as possible and to begin preparing the required measures immediately. Consequently, the Finnish Transport Infrastructure Agency started to organize a tender competition for traffic control in railway yards. The incumbent RU appealed against the Finnish Regulatory Body's decision to the Finnish Market Court. However, the decision was enforceable despite the appeal. Finnish Market Court issued its decision on 8 December 2022 in which it rejected the appeal of VR-Group Ltd and left in force the decision of the Finnish Regulatory Body. (01-04-2022)

France

- In February 2022, ART (FR) published an in-depth study on the competition in passenger railway market in France. After highlighting the strong potential of the French market for new entrants, the study notes the subsistence of several entry barriers, including high access charges. It then suggests various ways to overcome the actual drawbacks of the railway market.
- In May 2022, ART(FR) published the guidelines of track access charges negotiation between infrastructure managers and new entrant railway undertakings. The negotiation, which consists in general in reducing the charges paid by new entrants during their first years of service ("ramp-up phase") in French market, is allowed to promote the entry of alternative railway undertakings on passenger railway market.
- In September 2022, ART(FR) published a decision settling the disputes between four rail freight operators (the complainants) and SNCF Réseau (the IM) concerning the technical and operational conditions of access to the railway network. By granting two-thirds of some thirty requests formulated by the complainants, the RB issued several injunctions requiring SNCF Réseau to (1) improve the transparency of the network statement and that of information concerning the scheduling and use of infrastructure capacity reserved by SNCF Réseau for works, (2) implement penalty mechanisms to encourage it to comply with specific deadlines set out in the network statement, (3) establish and publish new indicators for monitoring the IM's performance, and (4) modifies the principles and procedures for compensating railway operators, in particular when SNCF Réseau, on its own initiative,

cancels or reduces the condition of a previously allocated train path. The RB has also recommended that SNCF Réseau carries out an exhaustive reshaping of the upstream phases of the infrastructure capacity allocation process, in order to move towards a more optimal and fairer use of the network.
However, the RB has dismissed the other requests made by the complainants, in particular, those aimed at (i) abolishing the procedure for placing train paths "under consideration", (ii) setting rates for firmly allocated train paths that increase for each working timetable, or (iii) increasing the deadlines imposed on SNCF Réseau in order to confirm the capacity reserved for works.

Germany

- Complaint about alleged breaches of unbundling requirements in the DB Group
  A railway undertaking complained about the granting of loans to presumably non-market conditions within the DB Group, the use of profits from the operation of the railways and the appointment of the supervisory board of DB Network AG, which is against unbundling requirements of the Railway Regulation Act (ERegG).
  Regarding the profit transfer within the DB Group, BNetzA has decided as per 28.6.2022 that the appeal was unfounded as it could not see a violation against these requirements. Indeed, the revenues from railway facilities paid by DB Netz AG to Deutsche Bahn AG were first transferred completely to the federal government then re-distributed by railway facilities within the group.
  Regarding the question whether the interest rates on intra-group loans correspond with the unbundling law, investigations by BNetzA are still ongoing, as for investigations on human and informational unbundling.
- Access to railway infrastructure/ network statement (NBN)
  According to German law, an operator of rail infrastructure may provisionally bring changes to the network statement into force but must give the railway undertakings an opportunity to comment on it without delay. Within a period of three months, the network statement must then be notified to BNetzA before they can come into force for an unlimited period. This newly introduced procedure ensures that the operator of railway infrastructure has significantly higher agility in the short-term implementation of measures. DB Netz AG made use of this provision several times in 2022.
- Modification of vehicles to hardened GSM-R radios
  In summer 2022, DB Netz AG network statement was updated to demand that DBs' rail network would only be allowed to be operated on by locomotives with so-called "hardened" GSM-R radios from 11.12.2022 onwards. However, this provision was declared invalid until 14.12.2024 by BNetzA by decision of 23.11.2022, because more than 1,000 locomotives of various vehicle owners would not yet have been equipped with hardened GSM-R radios until 11.12.2022. In addition to pandemic-related delays, this was mainly due to incomplete approval procedures, especially for locomotives used in multiple countries.
- Staffing of railway control centres
  BNetzA was informed of several cases of temporarily unoccupied operating units of DB Netz AG, in particular railway control centres, especially in the second half of 2022. BNetzA focussed on incidents with a longer duration – e.g. non-occupation of several hours or failure of whole shifts and investigated

the personnel situation on site. If the cause were individual incidents outside DB Netz AGs' control, such as road accidents or effects of the COVID-19 pandemic, BNetzA generally discontinued the procedures. From a regulatory perspective BNetzA cannot specify the personnel planning of DB Netz AG in detail, but is only responsible for the regulation of the maladministration and the resulting barriers to network access. If problems accumulate and are not eliminated, effective sanctions might become necessary.

Greece

- The foreign incumbent RU complained to RAS (Article 56 of 2012/34) against the infrastructure manager for non-compliance with the procedure for publishing the 2020-2021 network statement and the increases introduced in the chapter on charges for the use of railway infrastructure. After a hearing process, RAS decided the following:
  A. OSE, the IM, is called on to undertake a public consultation on the Network Statements of 2020 and 2021,
  B. IM and RU are called on to conclude an Access Agreement for the years 2020 and 2021,
  C. No later than three (3) months from the communication of the decision OSE is called on to draft and submit to the Ministry of Infrastructure and Transport a proposal for the issuance of a Ministerial Decision on the determination of the context, the rules and the charging criteria regarding the charges for the use of the national railway infrastructure.

Hungary

- Case ID: PIUF/40703-1/2022-ITM; According to the Hungarian railway act, requests by railway undertakings for access to, and supply of services in the service facilities shall be answered within a time limit not exceeding 15 days. While determining the time limit, we have taken into consideration that requests may only be refused if there are viable alternatives allowing railway undertakings to operate the freight or passenger service concerned on the same or alternative routes under economically acceptable conditions (11-02-2022).
- "Case ID: PIUF/3990/2022-ITM; According to Article 5 of Commission Implementing Regulation (EU) 2017/2177 operators of service facilities shall make publicly available the service facility description free of charge. As a result of an ex-officio investigation, we have come to the conclusion that GYSEV Zrt. (infrastructure manager/service facility operator) has failed to fulfil its obligation to provide and publish information on travel information. We have obliged GYSEV Zrt. to initiate the inclusion of a link to information on travel information displays in the Network Statement." (19-01-2022)
- "Case ID: PIUF/2294/2022-ITM and PIUF/2295-5/2022-ITM; According to Article 7e of Directive 2012/34/EU the infrastructure manager shall draw up and publish guidelines for coordination, in consultation with interested parties. As a result of two separate ex-officio investigations, we have come to the following conclusion: MÁV Zrt. and GYSEV Zrt. (Infrastructure managers) have drawn up and published the guidelines for coordination on its webpage, but has not provided the opportunity for the interested parties to take part in the drafting of the document.

We have obliged MÁV Zrt. and GYSEV Zrt. to provide the opportunity for the interested parties to express their opinion on the already published guidelines, to review the guidelines while taking into consideration the remarks received, and to modify the guidelines where appropriate." (18 & 28-01-2022)

Italy (main resolutions on rail sector)

- Resolution n. 17/2022, with which ART started the impact assessment of the regulation introduced with resolution n. 96/2015, containing "Criteria for determining the charges for access of the railway infrastructure" (which then led to the revision of said criteria, with resolution n. 95/2023).
- Resolution n. 44/2022, with which ART approved the extension of the regime of the Single Maneuver Manager (governed by measure 13.18 ex resolution n. 130/2019) of the "Railway District of the Port of Trieste and related logistics" to the districts of Monfalcone and Cervignano, as requested by the competent Port Authority.
- Resolution n. 131/2022, with which ART granted CFI Intermodal s.r.l. the requested exemption from the application of part of regulation 2017/2177 and resolution no. 130/2019, relating to two cargo terminals managed by the same company, for 3 years.
- Resolution n. 141/2022, tariff adjustments relating to the 2022-2023 service timetable for access to the infrastructure of the interconnected regional railway networks and the services related to them.
- Resolution n. 147/2022, start of sanctioning proceedings against Rete Ferroviaria Italiana S.p.A., pursuant to article 37, paragraph 14, letter a), of the Legislative Decree. 15 July 2015, n. 112, for the violation of article 23, paragraph 3, of the same legislative decree in reference to the limitations in the assignment of framework capacity referred to in paragraph 4.4.2.1 of the Network Statement for 2023.
- Resolution n. 156/2022, tariff proposal relating to the 2023-2024 service timetable for the Umbrian Regional Railway Infrastructure - Compliance with the criteria set out in Annex A to resolution no. 121/2018.
- Economic Equilibrium Test. On March 23, 2022, the undertaking SNCF Voyages Italia has informed the Authority that it intends to operate a new railway passenger transport service on the Milan - Genoa - Ventimiglia - Nice route.
- Full list on https://www.autorita-trasporti.it/wp-content/uploads/2023/09/ART-Relazione-Annuale2023.pdf

Ireland

No key regulatory decisions in 2022.

Kosovo

- Initiation and organizing the consultation process for the draft Network Statement 2024 and holding a public discussion with stakeholders.
- Preparing and sending to stakeholders final comments on the draft Network Statement 2024.

- Publication of data in the railway sector or harmonization of statistical data.
- Advertising campaign for passenger rights in rail transport.

Latvia

- On 15-08-2021. Latvia's railway regulatory body (RB) received a complaint from railway undertaking JSC Baltijas Ekspresis (RU) about the performer of essential functions of main infrastructure manager JSC LatRailNet (Charging body), regarding its decision to apply a discount to the charge for minimum access package for grain segment. RU expressed that the decision was unplanned and that very little time was given by the Charging body to express opinion on the matter and to provide additional information. RU viewed that the discount was intended for the incumbent because it had already started the transportation of grain. RU also complained that the reasoning for the decision was not clear and that there wasn't any logic for the calculation of the discount.

  RB investigated the case and concluded that enough time was not provided to the RU to express its opinion. To prevent a repeated occurrence of the situation as described in the complaint, the Charging body made the necessary amendments to the Charging scheme by describing the process by which railway undertakings can express their opinion on initiatives of Charging body in a timely manner.

  RB didn't find any substantial evidence to corroborate the other complaints of RU. As the main issue was resolved by the Charging body voluntarily, and RB didn't find any other infringements, RB decided on 15.08.2022. to reject the RU's complaint on the grounds that a violation of RU's rights was not observed thus there wasn't a basis for a decision. Decision has not been appealed to court, thus the decision is final and in force.

Lithuania

- A complaint concerning the recalculation of the payment due for the MAP for the period of validity of 2019-2020. RRT found that the recalculation of the payment due was made according to the rules set by the Government of Lithuania. RRT decided to reject the appellant's complaint (25-02-2022).
- The investigation on the charge for services provided at service facilities managed by IM. RRT noticed that some charges have significantly increased, compared with the charges set for the previous working timetable. The charge for the services "use of station and/or access tracks assigned to a railway service facility to drive wagons" ("the first service"), and "use of the train formation and facilities" ("the second service") grew up by 261% and 43%, accordingly. For the first service, RRT found out that the IM has unreasonably attributed the access tracks to the service facility, therefore, the cost of the service was overestimated. As a result, the charge for the service was set too high. For the second service, RRT found out that the IM has wrongly calculated the cost of it, as the IM has not included some of the train formation and shunting services and have used incorrect data on the amount of the service. Accordingly, the charges for the second service were calculated incorrectly. Therefore, RRT obliged the IM to recalculate the charges for the above-mentioned two services and to inform the RU concerned about the recalculated charges, and, if appropriate, about the overpayment for the services. In 2023 IM fulfilled the obligation, due to which it calculated the amount of 2.4 million EUR to be returned to the users of service facilities services (13-04-2022).

- A complaint concerning the allocation of infrastructure capacity. RRT obligates the IM to adopt a new decision on the allocation of capacity to the appellant, as IM allocated for RUs not all parts of actual capacity that the IM had primarily calculated based on the annual requests of the RUs, but the non-allocated parts IM announced as free capacities (08-07-2022).

Luxembourg

No key regulatory decisions in 2022.

Republic of North Macedonia

No key regulatory decisions in 2022.

The Netherlands

- Decision as result of complaint about usage restriction freight trains at Venlo station (July 2022).

Norway

- The Norwegian Regulatory Body (RB) received a complaint from railway undertaking (RU) Vy about the infrastructure manager (IM) Bane NOR regarding the IM's decision on the preliminary allocation of the remaining capacity according to Directive 2012/34/EU Annex VII point 17. The RB invested the case and found that Bane NOR had failed to comply by 1. incorrectly establishing criteria for which trains of each type of service should be rerouted, 2. preliminary allocating the remaining capacity to the specific RUs' train lines instead of doing a preliminary allocation for different types of train services and 3. not doing a preliminary allocation, but a seemingly binding allocation as presented in the start-up letter for the TT23 allocation process. The RB's decision means that Bane NOR had to give all the applicants the opportunity to apply for train paths without the limitations set out in the incorrect "preliminary" allocation. Bane NOR also has to review its routines for preliminary allocations to make sure it complies with Annex VII point 17 (16-09-2022).
- The Norwegian Railway Authority (SJT) received a complaint from Onrail AS. It concerned Bane NOR's altered track usage plan during weeks 20 to 40 in 2022 at the freight terminal in Alnabru, Oslo, due to the replacement of a lifting crane. Onrail complained about both the altered track usage plan and how Bane NOR had conducted the process of determining this. The complaint also addressed the lack of traffic control from Bane NOR at Alnabru. Our decision entails that Bane NOR had to conduct a new allocation process for the relevant terminal tracks at the Alnabru freight terminal for Onrail and potentially other applicants that accommodate Onrail's need for electrified tracks during the construction period. Bane NOR had to carry out such a process by June 29, 2022. We will also be able to approve other solutions that Bane NOR, Onrail, and potentially other affected parties agree upon (08-06-2022)

Poland

- One decision was issued consenting to the termination of a contract for the use of capacity by a rail infrastructure manager. The decision was issued due to the carrier's payment arrears (13-07-2022).
- Two decisions were issued to replace capacity utilization agreements between the infrastructure manager and rail carriers. Both decisions largely concerned the regulation of issues related to the operation of substitute communication. In one of the decisions, in addition to issues related to substitute communication, the regulator made more than a dozen other settlements on provisions on which the parties had not reached agreement (09-12-2022).

Portugal

- Approval of access charges for 2022 (23-06-2022)
- Validation of Network Statement for 2022 (29-09-2022)
- Approval of access charges for 2023 (11-11-2022)
- Validation of Network Statement for 2023 (15-12-2022)
- Refusal of access to the national railway network for the provision of a new passenger transportation service, starting in 2025, by a new Portuguese private railway company, due to lack of infrastructure capacity, following the economic equilibrium test request by the incumbent public railway passenger undertaking (29-07-2022).

Romania

- Decision no. 1/ 31.03.2022 concerning the complaint Transferoviar Călători SRL (a passenger railway undertaking) filed against "CFR" SA (Romanian IM) regarding the capacity allocation procedure on the route Bucharest North – Henri Coandă Airport T1, for the 2021-2022 travel plan. When investigating the case, CNSDF (the Romanian Regulatory Body) found that CFR SA did not allocate the paths for the airport route in a fair and non-discriminatory manner, considering that these criteria were not of a nature to decide between the rail transport operators in a fair and non-discriminatory manner. CNSDF adopted a decision and imposed the IM:

  a) to eliminate the criterion "Stability over time of the path in dispute" and to review all the criteria of the dispute resolution system published in the Network Statement;

  b) to consult the new dispute resolution criteria with the applicants and to publish them in the Network Statement;

  c) to reallocate the railway infrastructure capacity for the Bucharest North - Henri Coandă Airport T1 route in a fair and non-discriminator manner, according to the new established criteria, for the rest of the 2021-2022 working timetable.

  The IM has implemented all the measures imposed by CNSDFs Decision no. 1/2022. The parties did not appeal against the decision, but before the national court a third party, who is not a party to the complaint, contested the decision and requested its annulment, on the grounds that the regulatory body did not notify him of its decision. The case is pending.

- Decision no. 2 / 31.05.2022 concerning the complaint of Grup Feroviar Român SA filed against the National Railway Company "CFR" SA (Romanian IM) regarding a possible violation of the provisions of art. 56 paragraph. (2) from Law no. 202/2016. CNSDF (the Romanian Regulatory Body) was notified with a complaint by a private railway undertaking who is also a private infrastructure manager, against CFR SA, concerning a charge applied in the Contract for the operation of an industrial railway track in the station of Ploiesti Nord, concluded between the two parties in 2018. CFR SA proposed to the operator a new draft contract, according to which the value of the charge provided for servicing with staff of CFR SA increased. The applicant argued that CFR SA should not charge the operator at all for the service provided by the IM's staff in the station of Ploiesti Nord, because the staff is not exclusively used for the services provided by the IM to the operator of the industrial railway track, but also for other services provided by the IM. After investigating the case CNSDF found there were no elements leading to the find a violation of the provisions of art. 56 para. (2) of the national Law no. 202/2016 by CFR SA, regarding the calculation and application of the charges for the staff used by CFR SA. Based on the analysis CNSDF rejected the complaint of the applicant.

Serbia

No key regulatory decisions in 2022.

Slovakia

- In 2022 Regulatory Authority has taken several decisions or statements in the field of access to service facilities of infrastructure manager and service facilities of third parties. Binding opinions and statements have been issued within competences performed as National Enforcement Body for passenger rights in railway sector.

Slovenia

- In 2022, AKOS has designated three controls as priority inspections based on initiatives received and applications where preferential treatment is justified from a public interest point of view:
  (1) Supervision on the allocation of ad hoc train paths on the section of the Ljubljana-Brezovica line (construction works), on the allocation of X-2 train paths on the section of the Ljubljana-Brezovica line in the timetable period 2021/2022 and on the use and utilisation of train paths on congested line Divača-Port of Koper;
  (2) Supervision on the allocation of ad hoc train paths on the section of the Ljubljana-Brezovica line from 3.2.2022 onwards;
  (3) Control over the allocation of ad hoc paths and the correction of violations of the third paragraph of Art. 18d of Railway Transport Act;
  (4) Supervision on the determination of independence and prevention of conflicts of interest of members of the supervisory board of the IM and the members of the management of the IM according to Art. 11c in conjunction with Art. 24b of Railway Transport Act.

Spain

- Report about Indicative Rail Infrastructure Development Strategy developed by the Spanish Ministry of Transport (MITMA). This Strategy aims to meet future mobility needs in terms of maintenance, renewal and development of the infrastructure. The Indicative Strategy has been positively assessed. The Strategy links investments with commitments to multi-year public contributions, those included in the agreements signed between MITMA and the IMs. The Strategy proposes two investment scenarios, one of intense investment in high speed, and another of more balanced investment. MITMA opts for the latter. Although the Strategy includes general guidelines for railway planning, it does not provide the minimum detail required for each action, nor its timetable, budget or the criteria for the selection of projects. With regard to the agreements signed between MITMA and the IMs, the CNMC has already pointed out that they do not include the incentives to reduce network management costs provided in Article 30.3 of the Directive 2012/34/EU. The CNMC has also warned that the tariff collection forecasts contained in the agreements do not prevent the CNMC from exercising its supervisory power on tariffs. The official report can be consulted on our website (in Spanish).
- Report on the Draft Bill amending the sanctioning regime of the Spanish Railway Act. The future regulation sets the maximum sanctions that the CNMC may impose at 100,000 € for non-compliance with its information requirements, and 300,000 € for non-compliance with its resolutions (versus 6,300 € at the moment). Both are an improvement but are still insufficient. Therefore, the CNMC considers that it is more efficient to define maximum penalties in terms of a percentage of the revenue of the offending companies. Furthermore, the Draft Bill modifies the sanctioning regime applicable to the suppression or delay of train movements, so that commercial service providers may be sanctioned. The CNMC considers that these new infringements should be assessed together with the penalties and compensations that RUs already have to face according to other regulations in force, such as the regulation on incentives in the system of railway infrastructure charges. Finally, the Draft Bill introduces two new serious infringements for non-compliance with the provisions of two European regulations: the 2016 regulation on capacity allocation and the 2017 regulation on railway service facilities, the supervision of which is the responsibility of the CNMC. The Commission considers that the classification of the two new infringements will improve the effectiveness of supervision. However, breaches of other reporting obligations provided for in the Railway Act itself should be included as infringements. The official report can be consulted on our website (in Spanish).
- After analyzing a complaint filed by Asociación de Empresas Ferroviarias Privadas (the Spanish Association of Private Railway Companies), the CNMC (RB) has concluded that Adif and Adif AV (IM) report on capacity restrictions with less advance notice and detail than required by the Commision Delegated Decision (EU) 2017/2075. Accordingly, the CNMC (RB) has imposed various information and consultation obligations to ensure that infrastructure managers are able to take into the needs of railway undertakings when planning works.
- The CNMC has issued the Annual Rail Sector Report 2021. The report provides an overview of the sector's activity in 2021 and presents a first analysis of the liberalization of railway passenger services.

- Economic Equilibrium Test. On March 3, 2022 the new operator ILSA communicated the CNMC its intention to provide rail services on various routes coinciding with lines subject to Public Service Obligations (PSO).

Sweden

- Following a complaint from an applicant the Swedish RB, Transportstyrelsen, found that the main IM, Trafikverket, had infringed the capacity allocation rules. The IM had not acted in a fair and non-discriminatory manner when denying an applicant applied stops in allocated train paths on Skånebanan. Skånebanan is a line with intensive and heterogene traffic where a lack of stability highly impacts other connecting lines. The IM stated the stops were denied due to the lack of stability and punctuality of the line. The Swedish RB found that the reasons for the denial were not clear enough. Objectively based and transparent routines for the capacity allocation process had not been shown by the IM. Further, the IM hadn´t met the applicant´s request for infrastructure capacity as far as possible. The applicant had also raised the issue in the IM's dispute resolution process but was denied that opportunity. The Swedish RB found that the IM should have handled the case in its dispute resolution system. The Swedish RB has in its decision imposed the IM to give the applicants clearer reasons when denying applications due to lack of stability and punctuality on Skånebanan.
- The railway undertaking SJ AB made a complaint to the regulatory body (Swedish Transport Agency) regarding the infrastructure manager Trafikverket's (Swedish Transport Administration) revision of the capacity-allocation scheme. The railway undertaking was disappointed with the scheme and considered that the application date should be the same in all regions if the date changes after that the infrastructure capacity has been allocated. Furthermore, the railway undertaking argued that the revision process is discriminating and that it distorts the railway market in respect of those RUs who do not provide transport services in only one region. The regulatory body found that the infrastructure manager had failed to provide details on the offered train paths 18 weeks before the beginning of the capacity restriction which is set out in the infrastructure manager's network statement. The claim concerning the different application dates was however rejected. The main problem according to the regulatory body is that the infrastructure manager has failed to comply with the rules in its own network statement. The problems that the railway undertaking has faced are a result of this non-compliance. The regulatory body considers that it is possible that the different application dates may lead to distortion of the railway market but it, still, cannot be excluded that such distortion occurs even when the infrastructure manager is fully complying with the rules set out in the network statement. Therefore, the regulatory body concludes that it is beyond its adequacy to tell the infrastructure manager how it should act when it fails to comply with the rules stated in the network statement.
- The regulatory body in Sweden (the Swedish Transport Agency) received a complaint from a RU concerning the delay attribution code that the main IM (Trafikverket) used for a disruption in Boden on the 8th of May 2021. On the 8th of May, the RU drove the train to another railway station than the one planned, which in the IM's opinion caused a delay. The RU didn't agree with the IM on the given delay attribution code which was classed as a delay caused by the RU. The RU argued that they did not cause the disruption and that they just had followed the IM's instructions. The IM's dispute resolution system

could not resolve the disagreement. The IM thought that the application for the IM's dispute resolution system had been made too late. When investigating the case, the regulatory body was of the opinion that the dispute resolution system hadn't been able to determine the responsibility for the disruption and that there were deficiencies in the way the IM had acted towards the RU. The regulatory body also stated that the IM must make it at least more probable that the delay attribution code they suggest is correct, than the opposite. The IM shall also take certain actions to avoid this situation from occurring in the future.

Switzerland

- RailCom did not have to adjudicate on any complaints or appeals in 2022. RailCom carried out legal investigations and other procedures in various areas of market monitoring. RailCom also monitored the framework conditions within its area of responsibility to identify any cases of discrimination at an early stage and took proactive measures.

United Kingdom

Access

- ORR approved the introduction of new train services between London, Cardiff and South West Wales from the end of 2024. The services will be operated by a new open access operator, Grand Union Trains. The application, submitted to ORR in June 2022, was disputed by Network Rail due to concerns about capacity on the network. But following careful consideration and analysis, ORR directed Network Rail to enter into a contract with Grand Union. Grand Union has committed to significant investment in new trains. As an 'open access' train operator, however, it will not get paid subsidies from public funds, unlike current operators along the route. Regulator approves new Grand Union train service from Carmarthen to London Paddington (01-12-2022)
- ORR announced its decision to improve passenger and freight railway services between Wrexham and Bidston for Transport for Wales Rail Limited (TfWRL) and GB Railfreight Limited (GBRf). TfWRL and GBRf, had both applied for capacity that could not be accommodated together. Network Rail's initial capacity analysis showed that only one of the TfWRL or GBRf applications could be fully accommodated, so it rejected both. GBRf and TfWRL then asked ORR to take a decision on the competing applications for access to the line. ORR's review looked at the line's capability, operational issues, and a cost-benefit analysis of the proposed services. The regulator's decision delivers a positive outcome for passengers with TfWRL able to run 2 trains per hour for most of the day, as well as a positive outcome for freight and the local area. The freight trains which currently serve Padeswood cement works can continue with greater certainty because of the firm contractual basis. Each freight train on this line equates to the removal of 36 HGVs from the roads, bringing associated environmental benefits to the local area. | (30-11-2022)

Consumer decisions

- ORR released its consumer report. It found that train and station operators have made improvements to their services for disabled passengers, as set out in ORR's Accessible Travel Policy guidance. However, more still needs to be done, particularly on the quality of station accessibility information, and for customers that use screen-readers and other assistive technology. Accessibility and delay compensation improvements for passengers, but train and station operators have more to do | (07-07-2022)
- ORR published a report focused specifically on the administration fees for refunds for tickets that have not been used. Train operators and ticket retailers typically charge an administration fee for certain transactions, for example up to £10 where a passenger seeks a refund on a rail ticket. This is permitted by the National Rail Conditions of Travel (NRCOT). The Department for Transport (DfT) asked ORR to review the administration fees for ticket refunds and, in particular, to consider whether the level of fees is appropriate and reasonably reflects the costs incurred by retailers in processing refunds. ORR concluded that, where retailers are charging £10, this appears not to be based on an assessment of costs. Actual costs are generally lower, and often less than £5 on average. Rail regulator's review could reduce costly ticket refund admin fees | (16-02-2022)

Monitoring

- ORR published its annual assessment of Network Rail's efficiency and wider financial performance for 2021-2022, alongside the findings of a review into employment costs in the rail industry. ORR found the infrastructure manager's delivery of efficiencies remains good, with Network Rail reporting £840 million of efficiency improvements for the year, ahead of its £830 million target. Network Rail has now delivered £1.9 billion of efficiency improvements across the first three years of Control Period 6 (2019-2024). Network Rail now aims to deliver £4 billion of efficiency improvements across the five year control period ending in 2024, an increase on the £3.5 billion target originally set by ORR. The planned increase is mostly coming from workforce reform initiatives. ORR report shows Network Rail exceeded planned efficiency improvements and new employment study focuses in on pay and reward | (06-10-2022)
- ORR published its annual assessment of Network Rail. It found the company has continued to deliver its planned efficiencies in 2021/22 but warns it must carefully manage its financial risks, particularly in the context of rising inflation. The report shows Network Rail delivered £840 million of efficiency improvements for the year, above its £830 million target. Most of Network Rail's five regions met or exceeded their annual efficiency targets. ORR assesses that Network Rail is delivering more efficiently but calls for sustained focus in continuing to address recommendations made following the fatal derailment at Carmont | (20-07-2022)