

Independent Regulators' Group – Rail

Overview Paper on International Freight Services

May 2024

Introductory Remarks: This paper gives an overview about international freight services from the charging perspective. The paper therewith looks at the level of charges in the different IRG-rail member countries as well as differences in the freight charging schemes. To a certain extent, it integrates views on costs and cost drivers for international freight services.

Table of contents

0. Executive summary.....	5
1. Introduction and goal of the report	7
2. Definition of international freight services in law	8
3. Overview of international rail freight markets in Europe	9
3.1 Evolution of the freight market.....	9
3.2 Number of active international railway undertakings and market share of the foreign incumbents.....	11
4. The charging system of international rail freight services	14
4.1 Differences in charges for domestic and international services	14
4.2 Heat map on track access charging scheme parameters.....	15
4.3 Track access charges for freight services	17
4.4 Market segments for freight services	18
5. Level of charges in the different countries.....	20
5.1 Actual level of charges.....	20
5.2 Level of charges for representative trains.....	25
6. Subsidies for railway undertakings for the access to infrastructure	27
7. A tool to facilitate international freight services: the Charging Information System	31
8. Freight services and border crossing issues	35
8.1 Legal requirements for international rail freight services.....	35
8.2 Specific examples of case-studies regarding border crossing issues	35
9. Non-charging related barriers for international freight services	38
10. Cost related barriers to entry: outcome of interviews with leasing companies for rolling stock .	46
10.1. The rail leasing market: general introduction	46
10.2. Interviews with rail leasing companies.	49
11. Concluding remarks.....	51
12. Annex I: List of country abbreviations and regulatory bodies	53
13. Annex II: Examples of subsidies systems.....	54
12. Annex III: Examples of calculation of track access charges	58
13. Annex IV: Evaluation of ‘Quantitative Answers – Heat Map’	60

List of figures

Figure 1 Possible formation of an international train service.....	8
Figure 2 Breakdown between the international and national services in freight services.....	10
Figure 3 Breakdown between passenger and freight services (in percent based on train-km)	10
Figure 4 Market shares of freight RU in 2022 (based on train-km)	13
Figure 5 Market shares of freight RU in 2022 (Based on net ton-km)	13
Figure 6 Heat map on track access charging scheme components	16
Figure 7 Charging regime for freight in 2022	17
Figure 8 Average track access charges (€/Trkm) for the TTY 2022 for international freight services (as paid by the freight RU according to the network statement for the TTY 2022)	21
Figure 9 Average track access charges for international freight services (€/Trkm) for the TTY 2019 (as paid by the freight RU according to the network statement for the TTY 2019)	24
Figure 10 TAC, DC and MU (€/Trkm) for a 1000t electric freight train in 2022	26
Figure 11 TAC, DC and MU (€/Trkm) for a 3000t electric freight train in 2022	27
Figure 12 Rail freight subsidies in the Netherlands in 2022.....	29
Figure 13 Participating IM/Countries (marked gray), (Copyright by d-maps.com).....	32
Figure 14 Requests/Queries for TTY 2022 (Total, RUs and Freight RUs)	34
Figure 15 Time lost at some specific border crossing points and for a given period of time(2022).....	38
Figure 16 Issues List ILB 1 st phase conclusion.....	43
Figure 17 Issue Titles and Economic impact (EUR million).....	44
Figure 18 Estimated economic impacts at EU level discriminated per issues updated to 2022.....	45
Figure 19 Illustration of subsidies received by DB Netz AG (main IM in Germany).....	57
Figure 20 Overview TAC components	60

List of tables

Table 1 Rail freight RU per country in 2022 11

Table 2 Charging unit per country 18

Table 3 Market segments for rail freight services defined at national level in 2022 19

Table 4 Charges level in France per category for the WT 2022 22

Table 5 Charges level in France per category for the WT 2019 25

Table 6 Fleet of locomotives and share of leasing locomotives including characteristics 48

Table 7 Austrian rail freight subsidies 55

Table 8 Average freight charges in Germany for 2022 56

0. Executive summary

- 1 The present paper gives an overview about international freight services from the charging perspective. To this aim the paper starts with checking the transposition of Article 3(4) of Directive 2012/34/EU that defines international freight services into national law. Where this definition of international freight service is not strictly transposed in the domestic legal framework, the definition nevertheless is used in practice.
- 2 In the European rail market in 2022, rail passenger services account with 81% of the total train-km for the main share of total traffic, while rail freight services only cover the remaining 19% of the market. However, the split between passenger and freight traffic varies substantially among the countries and only in Slovenia the share of freight traffic exceeds with 51% that of passenger traffic in terms of train-km and therewith shows a main role for freight services. Looking at who provides rail freight services (in train-km) it can be noted that 48% is carried by domestic incumbents, 37% by non-incumbents and 14 % by foreign incumbents. International rail freight is especially substantial for the rail freight markets of the countries, where it has a high share. This is the case in Greece, Slovenia, Denmark and Latvia where international traffic constitutes approximately 95-99%. Looking at active railway undertaking (RU) in 2022 in the national market from a competitive perspective, it is to be noted that in Ireland, Luxembourg, Kosovo and Northern Macedonia only the national incumbents were active in the rail freight market. Compared to this, in Estonia and Portugal, only non-incumbent's RUs were active in rail freight transport, whereas in Bulgaria, Hungary, Romania and the United Kingdom, the market shares of non-incumbents were equal to or higher than 50%.
- 3 Within the charging schemes, only three IRG-Rail members (Latvia, Italy and the UK) confirmed having different access charges applying to international freight services. In general, track access charges tend to be the same for domestic and international services. Main reasons are the non-application of mark-ups for freight services and that international rail freight is not identified as a separated market segment. A reason could be that direct costs based charges are supposed to cover the wear and tear of train movements on the infrastructure and they do not differ, if the train under same characteristics is international or domestic.
- 4 The national charging schemes differ in terms of their components. Additionally, around half of the countries charge only direct cost-based charges, while the other half levies direct costs plus mark-ups for freight services. Further, approximately half of the countries only has one market segment for all freight services, while the other countries segment the freight services based on the type of commodity transported.
- 5 A majority of countries provide subsidies for rail freight services under different regimes, some of them focusing on specific transportation modes like intermodal traffic or single wagonload. It is important to mention that no country subsidises only international freight services, but rather all freight services or selected segments, where international rail freight forms part.
A tool that tries to give an overview on the charges to be paid by international (freight) trains, is the RNE Charging information system CIS (chapter 8.1). It aims at facilitating the calculation of charges for international train runs. A description of this system and its requirements is given as a tool that intends to facilitate international freight services.

- 6 Crossing borders means to leave one country's national systems and regulations and enter into the next country's requirements. Possible differing national requirements cause delays for the RU which entails at least costs in form of time losses. Focussing on selected border crossings, the short chapter 7 tries to give an overview on delays at single border crossing in a certain moment of time.¹ To note is the Oresund bridge border crossing between Sweden and Denmark where delays are not caused by national regulatory differences. Here technical and operational standards have been harmonised through regulation based in a bilateral agreement.
- 7 IRG-rail working group access has added an overview on non-charging related barriers (chapter 8.2). There are several technical and operational barriers hampering in particular, rolling stock compatibility, such as different signalling systems, different voltage and electrification systems or the lack of uniformity in infrastructure characteristics along an international corridor. In 2018, the European Commission launched the initiative Issues Logbook to accelerate progress of interoperability on the European railway network and to stimulate the growth of international rail transport. During five years 15 issues were discussed with the rail sector, first and initial solutions were found by means of soft law and/or technical/safety/market regulatory provisions and/or cleaning up of the so called "national rules". Nevertheless, the chapter concludes that coordinated, progressive and harmonized actions will be needed to progressively reduce and eliminate further the non-charges related barriers.
- 8 To complete the picture, the last part of the paper integrates information about the European rolling stock markets and the view of the European rail leasing companies and their perspective on market developments and on existing barriers for international rail freight services as well as on resulting or existing cost effects. Leasing companies mainly lease rolling stock to non-incumbent rail freight undertakings. Their locomotives are in majority equipped for the multisystem use in different countries. These equipment's are more expensive than domestic equipment. Making this rolling stock available and affordable facilitates the competitive entry into the European rail freight market. This is why the leasing companies have a distinct view on costs related to cross-border traffic and their view is added to this paper.

¹ The paper does not give a full picture in this respect, but only assess available information based on the few responses to the underlying questionnaire.

1. Introduction and goal of the report

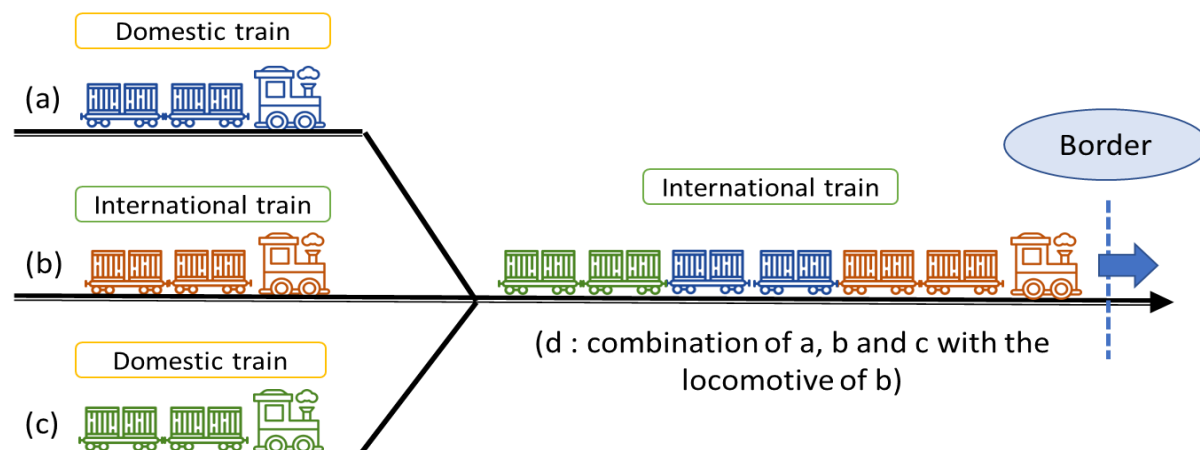
- 9 The development of international rail freight services is a topic of great relevance. Its increase is an important goal of the European Commission Green Deal and Sustainable and Smart Mobility Strategy. A comprehensive understanding of obstacles and challenges for international freight is important to promote and support the future and further development of the rail freight market as a whole and the singular services in particular.
- 10 IRG-rail's aim with this Paper is to use the expertise of the national regulatory bodies to increase to the knowledge on international rail freight services especially from the charging perspective. Charging systems and charging conditions have not been extensively studied in the context of how they matter for international rail freight. IRG-rail aims through this report to shed some light on this topic.
- 11 This overview paper on international rail freight services in Europe starts with a brief description of the rail freight market and its evolutions over the last few years. It gives indications about the importance of international rail freight services in the rail markets and more particularly focuses on charges and costs for international freight services. Therefore, this paper mainly presents the charging systems and charging conditions for domestic and international rail freight services. It includes an overview of charging levels across countries, as well as a more detailed analysis for different types of representative freight trains (standard and heavy freight trains, diesel and electric trains).
- 12 In addition to charging related issues, this paper analyses the dynamics of the rail freight market by looking at the number of RU per country and their international presence abroad. It further describes the different subsidy systems for freight services within Europe, including a focus on subsidies reducing the track access charges.
- 13 Charges should be considered together with other areas of relevance. This is why an overview of non-charging related barriers and obstacles together with potential solutions is provided in chapter 9 and an overview of the European rolling stock materials and the difference of costs between domestic and international locomotives is provided in Chapter 9. To inquire about the different circumstances for international rail freight services, this paper of the IRG-rail working group charges has started with a questionnaire including questions for a qualitative and quantitative assessment related to international rail freight services.
- 14 In the qualitative part of the questionnaire sent to IRG-rail members, participants were asked about the definition and description of their rail freight market, their rail freight track access charging scheme, the number of market participants, the access and charging conditions for international freight trains, national rail freight subsidies as well as legal requirements for national or international rail freight (optional).
- 15 The quantitative part of the questionnaire included questions on parameters for the rail freight track access charging scheme and average level of charges, on average direct costs and average mark-ups (if applicable) for the different rail freight segments (if applicable), on track access charges (TAC) for "representative pattern" trains (1000t and 3000t, diesel and electric) as well as information on border crossing issues.

- 16 The working group charges also issued a questionnaire dedicated to leasing companies in order to gather a view on the European locomotives markets focussing on the cost differences between international and domestic rolling stock.
- 17 The answers received in the questionnaire, related data from the IRG-rail working group market monitoring, data collection with external stakeholders and interviews with the European rail leasing companies build the basis for the following report.

2. Definition of international freight services in law

- 18 Art. 3(4) of the European Directive 2012/34/EU defines international freight service as “[...] a transport service where the train crosses at least one border of a Member State; the train may be joined and/or split and the different sections may have different origins and destinations, provided that all wagons cross at least one border”. The following figure illustrates an example of an international train:

Figure 1 Possible formation of an international train service



Source: IRG Rail – Working Group Charges

- 19 Responses to the questionnaire show that this definition has been adopted in most of European countries. Where this is not strictly transposed in the domestic legal framework, the definition appears nevertheless to be actually used in practice.²

² For instance, the Polish representative indicated that "There is no accurate and straightforward definition of "international freight service" in Polish law, although such terms as "international route" or "international train" appear in various legal acts with obvious regard for "international freight service" from Directive 2012/34. According to the Polish regulatory body, RUs and railway infrastructure managers often use their own definitions of international freight and/or passenger service, but there is a common understanding of what does "international freight service" mean as expressed in many documents and it does not differ greatly from the definition stated in art. 3 (4) of Directive 2012/34." Another example is found in the UK, for which its representative answered that the Freight transport and associated services makes a specific reference to this facility when defining international freight services: "International trains are defined as "those that are engaged on an international journey" and that "International rail journeys will generally be those to/from UK using the Channel Tunnel and trains crossing the border between Northern Ireland and Ireland".

3. Overview of international rail freight markets in Europe

²⁰ International rail freight traffic plays a relevant role in the transportation of goods and materials across Europe. Nevertheless the importance of international freight services in terms of their share on the national freight market varies to an important extent: trains running on international trips represent a small share of total rail freight traffic in some countries, whereas in others it represents the major share of the market. This chapter summarises the latest published data by IRG-rail working group market monitoring on the evolution of the European rail freight markets and the number of operators and their characteristics.

3.1 Evolution of the freight market

²¹ In 2022, the total rail traffic in IRG-rail member countries amounted to 4.56 billion train-km, which represents an increase of 10% compared with 2020, but a 1% decline when compared with 2019. Looking at the volumes transported in the rail freight markets in member countries amounted to 463 billion net ton-km in 2022. This represents a 1.3% decrease in the volume of goods transported when compared with 2021, but stays at the same level compared with 2019. Germany, with a volume of 140 billion net ton-km, representing 30.2% of the IRG-rail global freight market, ranked first among the member countries considered. It was followed by Poland and France, which covered a share of 13.5% and 7.6% respectively. These three national freight markets together constitute half of the European rail freight traffic in ton-km.³

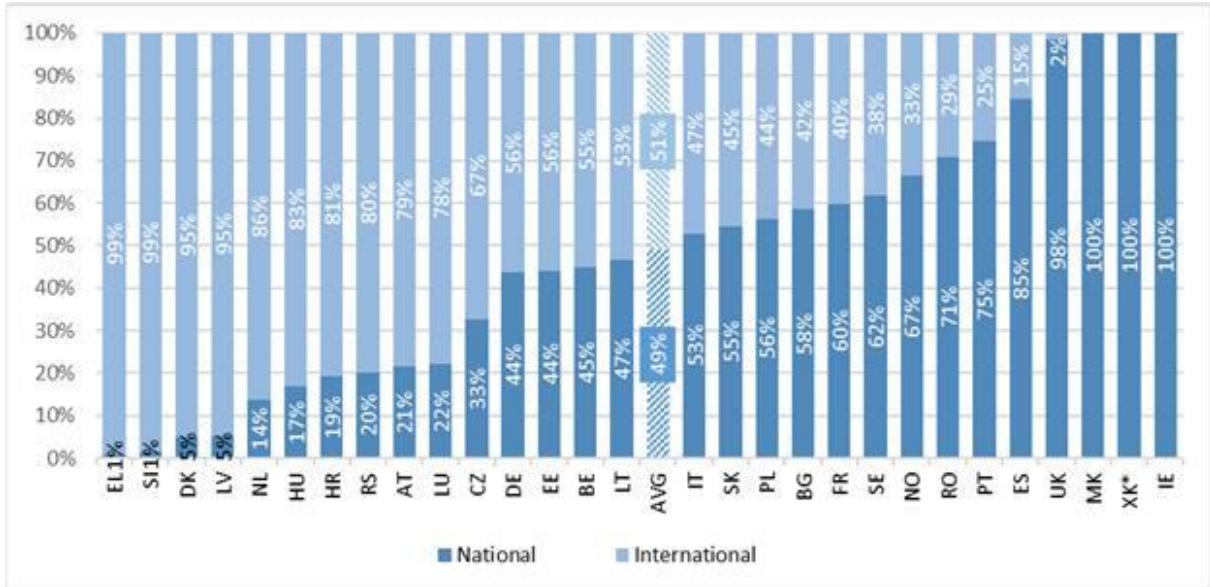
²² In 2022, 51% of total freight traffic (in ton-km) came from international transport. This proportion has only changed in decimals over the last five years, remaining generally constant. However, with respect to individual countries, to some extent there is a discrepancy. Whereas Ireland concentrates mainly on passenger transport (98%), in the case of Slovenia, by contrast, passenger transport accounts for 49%. Thus, Slovenia stands out as the only country in which the share of freight traffic exceeds that of passenger traffic in terms of train-km. Moreover, it can be noted that concerning freight transport services (in ton-km), 48% is carried out by domestic incumbents, 37% by non-incumbents and 15 % by foreign incumbents.⁴

²³ The allocation of freight services in 2022, measured in net ton-km and focussing on national and international traffic, exhibits generally a dichotomy among the observed countries. Greece, Slovenia, Denmark and Latvia illustrate a situation where international traffic constitutes approximately 95-99%. International rail freight is therefore especially relevant for the rail freight market of these countries. In contrast, Ireland, Kosovo, North Macedonia and the UK depict a contrasting situation, with national traffic making up 98-100%. In the case of Italy, Lithuania, Belgium and Slovakia, the weight is evenly balanced. Even among countries with similar regional and socioeconomic characteristics, such as Germany and France, distinctions emerge. In France, national freight traffic constitutes three-fifth of freight services, while in Germany, the distribution is more balanced, leaning slightly towards higher international freight traffic (56%).

³ See IRG-rail (2024), 12th Annual Market Monitoring Report, Working document, pg. 30.

⁴ Please see figure 5 of this report, pg. 13.

Figure 2 Breakdown between the international and national services in freight services⁵

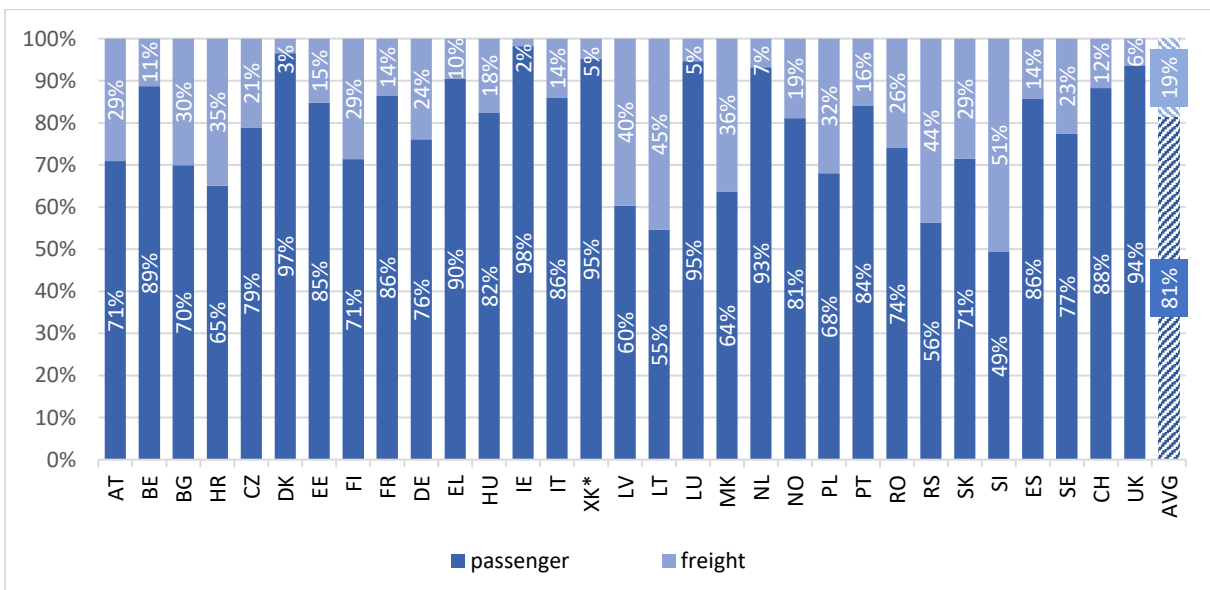


Source: IRG-Rail, WG Market Monitoring.

*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.

24 Rail freight traffic, however, is not that relevant if compared with the figures of passenger traffic. On average, rail passenger services accounted for the main share of total traffic with 81% of total train-km, while rail freight services covered the remaining 19%. However, the split between passenger and freight traffic varied substantially among the countries considered, only with Slovenia showing a main role of freight services.

Figure 3 Breakdown between passenger and freight services (in percent based on train-km)



Source: IRG-Rail, WG Market Monitoring

⁵ The average includes Finland although Finland is not included in this graph

**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.*

3.2 Number of active international railway undertakings and market share of the foreign incumbents

- 25 The number of active railway undertakings (RU) varies substantially across members. Some RU provide rail freight or rail passenger services, some provide both. North Macedonia, for example, has only one active RU that offers both passenger and freight services, indicating a highly concentrated market. In contrast, Germany has 342 active railway companies that offer passenger and/or freight services, indicating a highly competitive market. For most IRG-rail members (22), the number of active RU operating freight services exceeded the number of those operating passenger services. Freight services were offered by 74% of all RU, while passenger services were only offered by a third of all operators. It can be assumed that the majority of freight RU that operate in the different domestic markets also provide international services, particularly in small and medium sized countries. The following table gives an overview on how many RU provide rail freight services in the respective countries. The names in the table mentioned in *italic*, are the international branches of national incumbents.

Table 1 Rail freight RU per country in 2022

Name of Country	Number of rail freight RU	Sample of significant rail freight RU
Austria	55	Rail Cargo Austria, Lokomotion, TX Logistic Transalpine, ecco-rail, Cargo Service, LTE Austria, WLC (Wiener Lokalbahnen Cargo), ČD Cargo, Raaberbahn Cargo
Belgium	13	Lineas, DB Cargo Belgium, Railtraxx (SNCF group), Crossrail
Bulgaria	17	BDZ Cargo; DB Cargo Bulgaria EOOD; Bulgarian Railway Company EAD; PIMK Rail EAD; Rail Cargo Carrier-Bulgaria; Bulmarket Rail Cargo, LTE Bulgaria EOOD; Evroinjenering EOOD
Croatia	17	HZ Cargo, RCC, ENNA Transport, Rail and Sea, Train Hungary, Transagent and SŽ Tovorni promet.
Finland	6	VR-Group
France	23	Fret SNCF, DB Cargo France, Captrain France (SNCF group), Europorte, Naviland Cargo, Regiorail
Germany	237	Ranking based on track kilometres: 1. DB Cargo-Group, 2. SBB Cargo Germany, 3. Captrain Germany (SNCF group), 4. TX Logistik, 5. Metrans Rail ⁶
Italia	25	"The top four undertakings, in 2022, in terms of production, are as follows: 1. Mercitalia S.r.l., 2. Rail

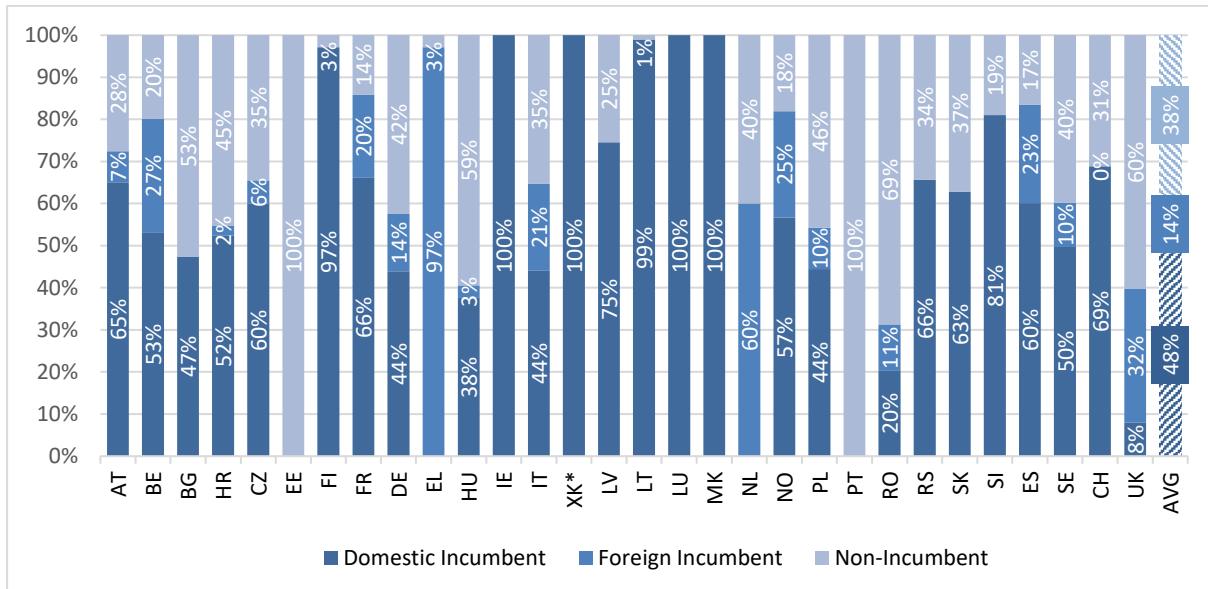
⁶ Source: IRG-rail, 12th Annual Market Monitoring Report, Working document, figure 19, pg. 28, related to 2022 data.

		Traction Italy S.p.a, Captrain Italia S.r.l. (SNCF group), SBB Cargo Italia S.r.l
Latvia	4	LDZ CARGO Ltd., JSC "Baltijas Ekspresis", JSC "BALTIJAS TRANZĪTA SERVISS", LLC "EURO RAIL CARGO"
Lithuania	3	AB LTG Cargo, AB „Akmenės cementas“, UAB „Gargždų geležinkelis“
Norway	9	CargoNet AS, , Hector Rail AB, LKAB Malmtrafikk AB, OnRail AS, Grenland Rail AS, and Green Cargo AB
Poland	102	PKP Cargo
Portugal	2	Medway and Takargo
Romania	27	Grup Feroviar Roman, Unicom Tranzit, DB Cargo Romania
Slovakia	44	ZSSK Cargo, Metrans /Danubia/, Retrack Slovakia
Slovenia	7	SŽ-Tovorni promet, Adria Transport, Rail Cargo Carrier, PKP Cargo International SI
Spain	10	Captrain España S.A.U, (SNCF Group), CONTINENTAL Rail S.A., MEDWAY S.A., RENFE Mercancías S.A.U. and TRANSFESA Logistics S.A.
Sweden	11	Green Cargo AB, Hector Rail AB, LKAB Malmtrafik AB
The Netherlands	32	DB Cargo (largest market share), Lineas, RTB Cargo, Rail Force One, Rotterdam Rail Feeding, LTE Netherlands, Captrain Netherlands (SNCF group), SBB Cargo International.
UK	12	GB Railfreight, DB Cargo, Europorte

- 26 The three countries with the highest number of RU are Austria (more than 55), Germany and Poland. This seems to reflect a rather high level of competition in those markets. In some countries, the number of competitors in the rail freight market is rather low.
- 27 The following figure shows the share of domestic incumbents, foreign incumbents and non-incumbents in terms of freight train-km and net ton-km, respectively. Domestic incumbents still account for the majority of the freight market in 19 countries in terms of freight train-km and in 18 countries in terms of ton-km. On average, national incumbents accounted for 48% of the traffic (in

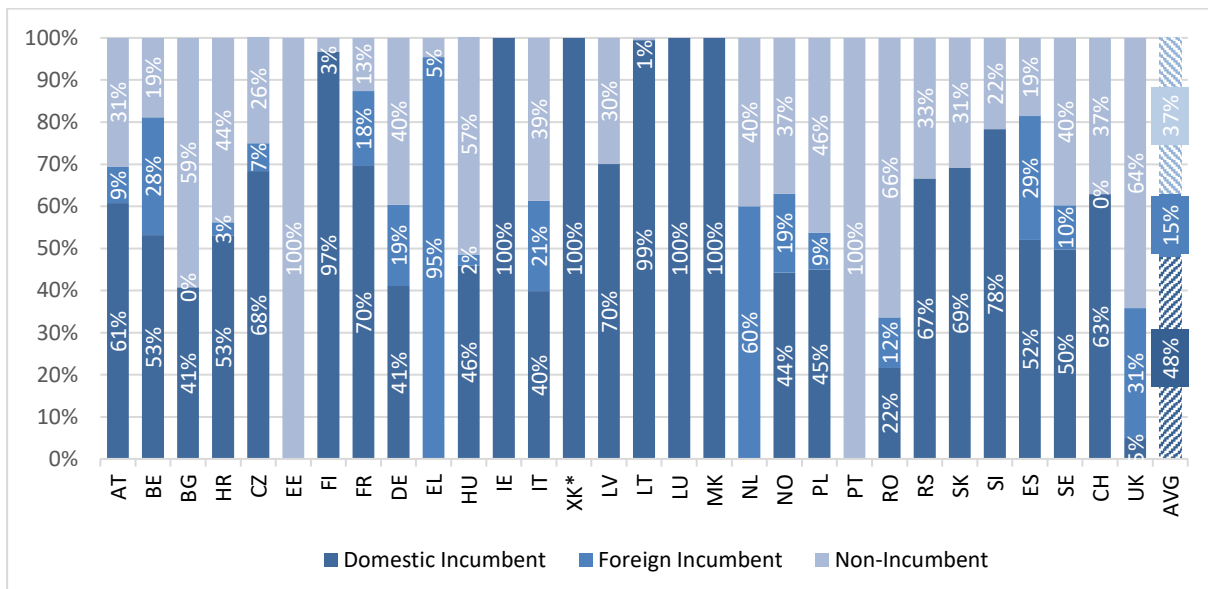
both train-km and net ton-km). This represents a drop of 5 percentage points for train-km and for ton-km, each compared to 2019.⁷

Figure 4 Market shares of freight RU in 2022 (based on train-km)



Source: IRG-Rail (2024), 12th Annual Market Monitoring Report, Working document, figure30, pg.38.related to 2022 data

Figure 5 Market shares of freight RU in 2022 (Based on net ton-km)



Source: IRG-Rail (2024), 12th Annual Market Monitoring Report, Working document, figure 31, pg. 39.

²⁸ In 2022, in Ireland, Luxembourg, Kosovo and Northern Macedonia, only the national incumbents were active in the rail freight market. In Estonia and Portugal, only non-incumbents were active in rail freight

⁷ See IRG-Rail (2024), 12th Annual Market Monitoring Report, Working document, pg. 36.

transport, whereas in Bulgaria, Hungary, Romania and the United Kingdom, the market shares of non-incumbents were equal to or higher than 50%. Comparing 20 countries' freight train-km in 2022 to 2019, the share of competitors (foreign incumbents and non-incumbents) increased.⁸

4. The charging system of international rail freight services

²⁹ International rail freight services are subject to the national charging rules for the services included in the minimum access package with respect to direct cost based charges⁹ and the application of mark-ups.¹⁰ This chapter analyses the charges that apply to rail freight services, with a particular focus on international services. It also analyses whether the international characteristic of a rail service is a criterion to distinguish (an) international segment(s) when levying mark-ups for freight services.

4.1 Differences in charges for domestic and international services

³⁰ Our findings show that, for most countries, charges for international rail freight services do not differ from the charges levied for national rail freight services. Therefore, in general terms, RU operating freight services pay the same level of charges regardless of whether they operate a domestic or international service.

³¹ Out of 21 answers received to the question whether there were track access charges solely related to international rail freight services on the network of the relevant infrastructure manager (IM) –i.e. whether the international rail freight operator pays a different charge than the national rail freight carrier, only three IRG-Rail members confirmed having different access charges applying to international freight services. This is the case for Latvia, Italy and the UK. Latvia has transposed into national law the exemption set out in article 32 (2) of Directive 2012/34¹¹, hence the IM applies a higher charge for carriage of goods to Russia and Belarus. In the UK, international rail freight services need to use the channel tunnel, for which specific charges are levied by Getlink (the IM for the Channel Tunnel) beside the charges levied by British IM.

³² The fact that charges tend to be the same for domestic and international services can be explained by the absence of mark-ups levied on freight segments as well as on segmentation that does or does not identify separated segments for international services. Considering that direct costs are supposed to cover the wear and tear of train movements on the infrastructure, there seems to be no reason why the corresponding direct cost based charges should differ, if the train is international or domestic and shows the same characteristics. Domestic and international services could bear mark-ups (based on Art. 32 (1) of the Directive), depending on their categorisation in a market segment at the national level.

⁸ See IRG-Rail (2024), 12th Annual Market Monitoring Report, Working document, pg. 37.

⁹ For more detailed elaboration on the legal background on mark-ups and market segmentation see IRG Rail Paper “Overview of the application of market segments and mark-ups in consideration of Directive 2012/34/EU”, pp. 5-7.

¹⁰ For more detailed elaboration on the legal and economic background on mark-ups and market segmentation see IRG Rail Paper “Overview of the application of market segments and mark-ups in consideration of Directive 2012/34/EU”, pp. 4-5.}

¹¹ For the carriage of goods from and to third countries operated on a network whose track gauge is different from the main rail network within the Union, infrastructure managers may set higher charges in order to obtain full costs recovery of the costs incurred.

4.2 Heat map on track access charging scheme parameters

- ³³ As part of the questionnaire, IRG members were asked to indicate whether specific components or parameters were part of their track access charging scheme or were at least discussed during the development of the track access charging scheme. The components considered in the questionnaire were axle load, dangerous goods, electric wear and tear, horizontal forces, international/domestic, longitudinal stiffness, number of vehicles, part of network, speed, track parameters, traction power, train length, train mass, type of vehicle and wheel flats. The heat map (**Fel! Hittar inte referenskölla.**) summarizes the answers and provides a brief overview across the responding countries.
- ³⁴ For most parameters – except for ‘train mass’, ‘electric wear and tear’ as well as ‘Track parameters’ – the majority answer was ‘discussed but not applied’. In 94% of the track access charging schemes ‘train mass’ was applied, while ‘track parameters’ were considered in 47% of the countries respectively. For ‘electric wear and tear’ around two thirds of the responding parties indicated that it is part of their track access charging scheme. For more information, please see the “Heat map on track access charging scheme components” chart or alternatively for a more detailed overview, please see Annex II.

Figure 6 Heat map on track access charging scheme components

	AT	BE	BG	HR	FI	FR	DE	IT	LV	LT	PL	SK	SI	ES	SE	NL
Axle Load	Light Blue	Light Blue	Light Blue	Green	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Dark Blue	Green	Green	Light Blue	Light Blue
Dangerous Goods	Dark Blue	Light Blue	Light Blue	Dark Blue	Light Blue	Light Blue	Green	Light Blue	Light Blue	Green	Light Blue	Dark Blue	Green	Light Blue	Light Blue	Light Blue
Electric wear and tear	Green	Green	Light Blue	Green	Light Blue	Green	Light Blue	Green	Light Blue	Green	Light Blue	Green	Green	Light Blue	Light Blue	Light Blue
Horizontal forces	Green	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue
Int. / Domestic	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Dark Blue	Green	Light Blue	Light Blue	Light Blue	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue
Longitudinal stiffness	Green	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue
Number of vehicles	Dark Blue	Green	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Dark Blue	Green	Light Blue	Light Blue	Light Blue
Part of Network	Dark Blue	Light Blue	Light Blue	Green	Light Blue	Light Blue	Dark Blue	Light Blue	Light Blue	Dark Blue	Light Blue	Dark Blue	Green	Green	Light Blue	Light Blue
Speed	Green	Green	Light Blue	Green	Light Blue	Light Blue	Dark Blue	Green	Light Blue	Dark Blue	Light Blue	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue
Track parameters	Green	Light Blue	Light Blue	Green	Light Blue	Green	Light Blue	Light Blue	Light Blue	Dark Blue	Green	Green	Light Blue	Light Blue	Light Blue	Light Blue
Traction power	Light Blue	Green	Light Blue	Green	Light Blue	Green	Light Blue	Light Blue	Light Blue	Dark Blue	Light Blue	Green	Light Blue	Light Blue	Light Blue	Light Blue
Train length	Light Blue	Green	Light Blue	Green	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Dark Blue	Light Blue	Dark Blue	Green	Light Blue	Light Blue	Light Blue
Train mass	Green	Green	Light Blue	Green	Light Blue	Light Blue	Light Blue	Light Blue	Green	Dark Blue	Light Blue	Green	Green	Light Blue	Light Blue	Light Blue
Type of vehicle	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Dark Blue	Green	Light Blue	Light Blue	Light Blue
Wheel Flats	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Dark Blue	Light Blue	Light Blue	Light Blue	Light Blue

Note: Colours indicate - light blue for 'Not Discussed', blue for 'Discussed Not Practical', dark blue for 'Discussed Not Applied', green for 'Applied', white for no data provided

4.3 Track access charges for freight services

- 35 The following figure gives an overview of the basic charging components (direct cost based charges and mark-ups) charged for rail freight services in the different countries. It appears that while in some countries, freight services only bear direct cost based charges, an equal amount of other countries charge additional mark-ups.

Figure 7 Charging regime for freight in 2022



Source: Answers from IRG-rail members to the questionnaire issued by WG Charges on international freight services.

- 36 As shown in **Fel! Hittar inte referenskälla.**, nine out of eighteen countries levy mark-ups in at least one market segment. Some countries in which mark-ups are applied have indicated that there is just one freight segment. Other countries have different freight market segments without making a distinction between domestic and international services.
- 37 In Germany (marked dark blue in the figure above), in principle, all rail freight services bear mark-ups (standard freight trains, dangerous goods block trains, local freight trains as well as very heavy trains – and loco runs) depending on their ability to bear. In some countries, where mark-ups are levied on freight services (shown in dark blue), mark-ups do not necessarily apply to every freight service. Instead, in some countries, only certain freight segment bear mark-ups. In Sweden freight services are treated as a single segment for charging purposes. At the time of the survey, in 2022, a mark-up was charged on certain lines of the rail network, however as of 2024 the freight segment is no longer charged mark-ups. In Latvia, there are specific mark-ups for services to Russia or Belarus.
- 38 Some countries have a charging scheme where the determination of the direct cost for the use of the tracks is only based on the number of km of the freight trains. However, in the majority of the countries, the number of km is combined with the mass of the train. The reason for the latter could

relate to the weight dependent costs: the heavier the train is, the higher the costs of wear and tear, which increase the track access charge.

Table 2 Charging unit per country

	Train.km only	Gross ton and (train.km)
Countries	Belgium, Spain, Portugal, Slovenia, Norway ¹²	Bulgaria, Croatia, France, Finland, Germany, Italy, Latvia, Luxemburg, Poland, Romania, Slovakia, Sweden, The Netherlands, Sweden, UK, Austria, Lithuania, ¹³
Percentage (out of 22 countries)	22 %	78 %

4.4 Market segments for freight services

³⁹ According to the answers received to the questionnaire, approximately half of the countries have only one market segment for all freight services at a national level. Among the other countries that define more than one segment, it is rather common for the segmentation criteria to be based on the type of commodity transported.

If there is no specific segment for international rail freight services, charges are not differentiated between domestic and international freight services.

¹² As per 2024.

¹³ As per 2024.

Table 3 Market segments for rail freight services defined at national level in 2022

Country	Number of market segments	Freight Segments
Bulgaria	3	1) Freight trains, 2) combined transport and 3) transportation of trucks, trailers and semi-trailers.
Croatia	5	1) Trains carrying dangerous goods versus other freight trains, 2) domestic versus international services, 3) combined transport versus direct trains, 4) block trains versus single wagon load trains and 5) regular versus occasional train services.
Germany	6	1) Standard train, 2) very heavy train (more than 3000 tons), 3) dangerous goods, 4) local freight service (less than 75 kilometres), 5) dangerous goods local freight service and 6) locomotive / empty run. ¹⁴
Italy	3	1) Night; 2) NA.DA. Top (Travelling mainly during the DAY (< 51% of the route in the 22 – 06 slot; Distance travelled ≥ 100 km and < 800 km) and 3) NA.DA. Base (Travelling mainly during the DAY (< 51% of the route in the 22 – 06 slot; Distance travelled < 100 km and ≥ 800 km).
Lithuania	4	1) Intermodal goods, 2) dangerous goods, 3) low-value goods and 4) other goods.
Poland	1 (2) ¹⁵	There are no defined rail freight segments at national level, as there are no defined rail segments in polish law at all. For statistical and market observation purposes, rail freight services are distinguished into "regular" and those, where dangerous goods are being moved; similar freight services segmentation – or to be more precise "division", since "segment" has its own precise definition, that can't be applied here freely - is used in mark-up pre-analysis done by the railway IM.
UK	11	Segmentation based on the type of commodity: coal, iron, metals, petroleum and chemicals, intermodal freight transported in a container or vehicle, nuclear fuel, general distribution, premium mail and logistics, biomass, bio-fuel production aggregates, or construction aggregates is a broad category of materials used in construction

⁴⁰ Besides a national segmentation of the rail freight market, UK, Italy and Latvia responded that their country has a defined market segment for international rail freight. Apart from the segmentation, in some countries, charges are modulated according to different parameters, such as in Spain, where freight trains pay a different charge for conventional lines and for high-speed lines. In the UK, there is a mark-up for transporting certain commodities such as ESI coal; iron ore or spent nuclear fuel. In the Netherlands, the freight track access charges, including the direct cost based charge and the mark-up,

¹⁴ The dangerous goods local freight service segment is discontinued from 2024 onwards.

¹⁵ For statistical and market observation purposes.

are differentiated in 7 subsequent weight categories. The German IM has established different market segments and determined direct cost based charges for each segment, differing, for example, by weight and length of the trains.

5. Level of charges in the different countries

- ⁴¹ This chapter compares the level of average track access charges for rail freight services in the IRG-rail member countries. In addition, it presents the level of charges for representative categories of trains (heavy trains of 3000 t and “normal” trains of 1000 t, electric and diesel trains.) and the difference of charges between those categories.
- ⁴² The average unit levels of the different charging components represented in the figures were extracted from the Network Statements or calculated by comparing the total IM revenues for each charging component by the total train km.

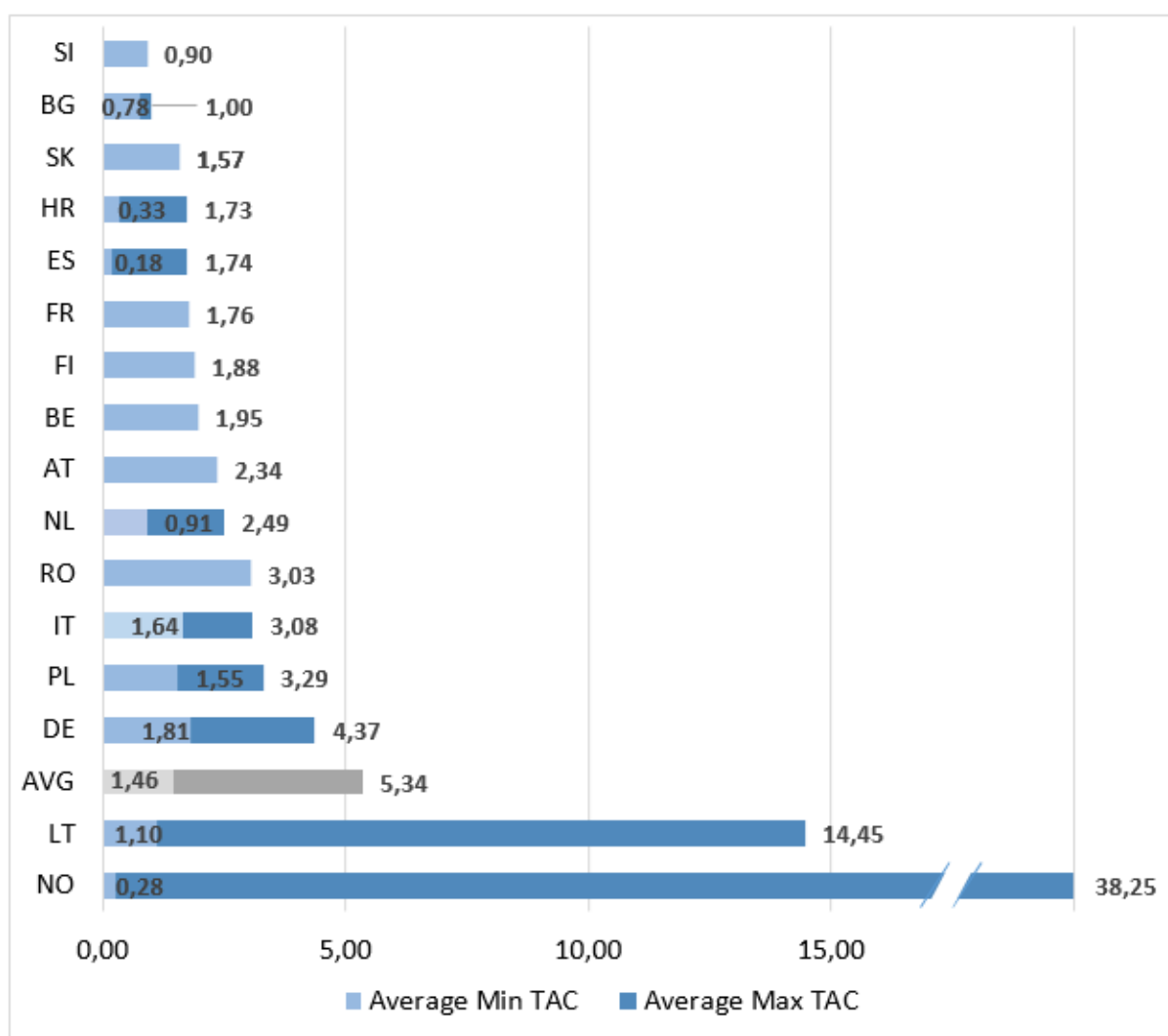
5.1 Actual level of charges

- ⁴³ Due to different mark-ups and differences related to the modulation of direct cost based charges, final charges paid by rail freight services vary between countries. In order to have a more complete view of the level of average charges in each country and to take into account their variability depending on the market segment, the following graph represents the maximum and minimum track access charges in each country considering all specified freight market segments for the year 2022.
- ⁴⁴ The average maximum track access charge (“Average Max TAC”), as represented in figures 8 and 9, corresponds to the average value paid by RU for the segment with the highest average track access charge. The average minimum track access charge (“Average Min TAC”), as represented in figures 8 and 9, corresponds to the average value paid by RU for the segment with the lowest average track access charge. In countries where there is just one market segment there is just one value, which by default is shown as “Average Min TAC”.
- ⁴⁵ Our data gathering revealed considerable differences in the level of average track access charges. These differences may be explained by several factors, including the level of state subsidies paid directly to the IM¹⁶ or indirectly as a refund to the RU, the direct cost allocation methods used to estimate costs and methods used to assign these costs to the various rail services, the presence or absence of mark-ups, the design of market segmentation, or even infrastructure characteristics.
- ⁴⁶ When analysing track access charges for international freight services on a by-country basis, Figure 8 and 9, it is necessary to take into account that some track access charges values are represented in gross values and others net of subsidies. These subsidies can have a significant impact on the level of track access charges.

¹⁶ In some Member States, distinct (additional) subsidies are paid to the IM in order to lower the TAC.

47 **Figure 8** below presents the minimum and the maximum level of average charges in 2022 in each country for (international) freight services, corresponding respectively to the average value paid by RU for the segment with the lowest average track access charges and with the highest average track access charges. IRG-rail members were asked to give information on the average track access charges levels for different market segments. From this data set the maximum and minimum as well as an average value from all countries' track access charges ('AVG') were calculated to indicate the relative level of the countries track access charges in a country relative to the other countries. If in the below table, there is just one value displayed, all freight services "pay" this (average) charge.

Figure 8 Average track access charges (€/Trkm) for the TTY 2022 for international freight services (as paid by the freight RU according to the network statement for the TTY 2022)¹⁷



Source: Answers by IRG members to the questionnaire issued by WG Charges on international freight services.

Note: In Norway and Lithuania, the charging unit is not only per train.km but per gross ton and train.km. Track access charges in Lithuania have been computed by assuming a 1000 tons train. In Norway the conversion from gross ton km to train km is done using the actual train weights.

¹⁷ In the case of France, the figure is an average of the charges that are supposed to be paid by the freight RU as calculated and published by SNCF Réseau in 2021 in the NS 2022. Notice that the difference with the average of the charges for year 2019 presented below is not only related to the evolution of the level of charges but also to the hypothesis in terms of traffic in the different weight categories.

- 48 Based on the data gathered for 2022, the average track access charge for an international freight service ranges from a minimum of 1.51 € per train.km, to a maximum of 3.41 € per train-km. It is worth noting the difference in charges within the same country. In the case of Lithuania, the maximum track access charge corresponds to the dangerous goods segment, which is thirteen times higher than the amount paid on the intermodal goods segment, which is paying the minimum track access charge. Another example of a large variability is Spain, where trains running on the high-speed network pay more than eight times the charges defined for the conventional network. Spain reported the lowest value overall. Norway reported a very low value, too, as well as the highest values for track access charges compared to among the other respondents.
- 49 In the case of France, the level of charges that corresponds to the calculation of the direct cost is the “redevance de circulation brute” (gross traffic charge) and the level of charges that applies net of the subsidy from the state is the “redevance de circulation nette” (net traffic charge). The difference between the two is shown in the table below. The minimum and the maximum charge (not taking into account the direct cost for electric equipment) that reflects the provisions of the network statement is 0.87 € for the minimum and 2.43 € for the maximum. In addition, the Government has introduced further help that applies to all the freight operators with a contribution of 50% of the charges owed by freight operators to SNCF Réseau from 2021 onwards.

Table 4 Charges level in France per category for the WT 2022

Categories in tons	Reference tonnage	% Trkm	“Redevance de circulation nette			Redevance de circulation brute		
			UIC 2-6	UIC 7-9	Average charge /Trkm	UIC 2-6	UIC 7-9	Average direct cost (€/Trkm)
[0-350[175	15 %	0.87	0.57	1.76	0.87	0.57	3.14
[350-750[	525	18 %	1.06	0.50		1.71	0.81
[750-1050[	875	14 %	1.58	0.65		2.54	1.05
[1050-1550[	1300	24 %	2.20	0.83		3.56	1.35
>= 1550	1994	29 %	2.43	0.88		5.22	1.83	

Source: Document principal - DRR 2022 V6, [sncf-reseau.com](https://www.sncf-reseau.com), https://www.sncf-reseau.com/medias-publics/2024-01/drr_2022_annexes_compiles_1_0.pdf, pg. 203.

- 50 In Poland, the difference between the lowest and the highest freight charge depends on the weight of the train and the type of the train path requested by the RU. A train path can comprise different sections. There is differentiation of charges depending on the type of route requested. On top of this additional direct costs are charged for the use of electrified track. Furthermore, direct cost based charges differ between intermodal and non-intermodal international freight trains as intermodal discounts apply. Total charges differ between intermodal and non-intermodal international freight trains as non-intermodal international freight trains doesn't pay markups. The data on mark-ups are specific and only apply for non-intermodal trains that weigh more than 660 tons.

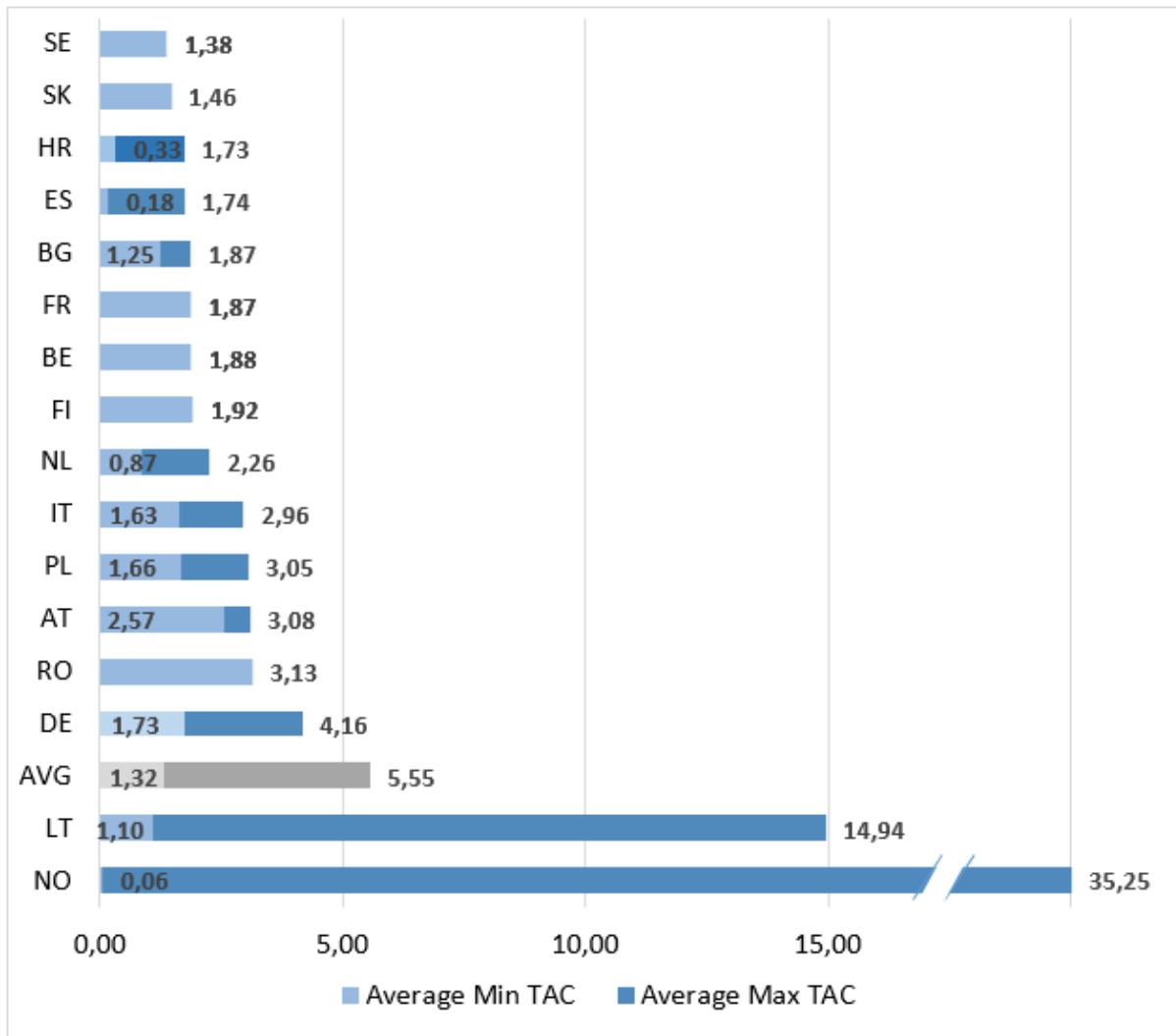
In Spain, the differences are explained by the fact that there are specific and higher charges for freight trains running on high-speed lines and whether locomotives are electric or diesel powered. Electric

trains shall bear the TAC component that stands for the energy distribution elements of the infrastructure, while diesel trains do not.

- 51 For Germany, the 'dangerous goods' segment bears the highest charge, while the 'local freight train' represents the lowest charge. The track access charges as represented in the figure are not the charges paid by the RU as the charges are reduced by direct subsidies.¹⁸
- 52 **Figure 9** below presents the minimum and the maximum level of average charges in 2019 in each country for international freight services, corresponding respectively to the average value paid by RU for the segment with the lowest average track access charges and with the highest average track access charges. IRG-rail members were asked to give information on the average track access charges levels for different market segments. From this data set the maximum and minimum as well as an average value from all countries' track access charges ('AVG') were calculated to indicate the relative level of the countries track access charges in a country relative to the other countries.

¹⁸ Please refer to chapter 6 for details on the subsidies in Germany.

Figure 9 Average track access charges for international freight services (€/Trkm) for the TTY 2019 (as paid by the freight RU according to the network statement for the TTY 2019)¹⁹



Source: Answers by IRG members to the questionnaire issued by WG Charges on international freight services

Note: In Norway and Lithuania, the charging unit is not only per train.km but per gross ton and train.km Track access charges in Lithuania have been computed by assuming a 1000 ton train. In Norway the conversion from gross ton km to train km is done using the actual train weights.

Disclaimer: The maximum track access charges as represented corresponds to the average value paid by RUs for the segment with the highest average track access charges. The minimum track access charges, as represented in figures 8 and 9, corresponds to the average value paid by RU for the segment with the lowest average track access charges. In countries where there is just one market segment there is just one value, which by default is shown as "Average Min TAC".

53 Comparing the 2019 and 2022 figures, track access charges for international freight services have decreased or remained constant in most countries, except for Germany and Slovakia. One possible explanation why these reductions have occurred could be that the countries have applied the Covid

¹⁹ In the case of France, the figure is an average of the charges that are supposed to be paid by the freight RU as calculated and published by SNCF Réseau in 2018 in the NS 2019. Notice that the difference with the average of the charges for year 2022 presented before is not only related to the evolution of the level of charges but also to the hypothesis in terms of traffic in the different weight categories.

track access charges regulation.²⁰ While in Germany the Covid track access charges regulation was applied until end of 2021 for freight services, in Spain and Austria (for combined and wagonload traffic) it was applied until the end of 2022.

Table 5 Charges level in France per category for the WT 2019

Categories in tons	Reference tonnage	% Trkm	"Redevance de circulation nette			Redevance de circulation brute		
			UIC 2-6	UIC 7-9	Average direct costs/Trkm	UIC 2-6	UIC 7-9	Average direct cost (€/Trkm)
[0-350[175	5 %	0.85	0.56	1.87	0.85	0.56	3.21
[350-750[	525	12 %	1.01	0.48		1.67	0.79
[750-1050[	875	11 %	1.51	0.62		2.49	1.03
[1050-1550[	1300	43 %	2.10	0.79		3.49	1.32
>= 1550	1659	28 %	2.32	0.83		4.33	1.56	

Source: https://www.sncf-reseau.com/medias-publics/2024-01/drr_2019_annexes_compiles_0_0.pdf, pg. 286.

- 54 As for year 2022, in the case of France, the level of charges that corresponds to the calculation of the direct cost is the "redevance de circulation brute" (gross traffic charge) and the level of charges that applies net of the subsidy from the state is the "redevance de circulation nette" (net traffic charge). The difference between the two is shown in Table 4 (above). The minimum and the maximum charge for TTY 2019 (not taking into account the direct cost for electric equipment) that reflects the provisions of the network statement is 0.85 € for the minimum and 2.32 € for the maximum.

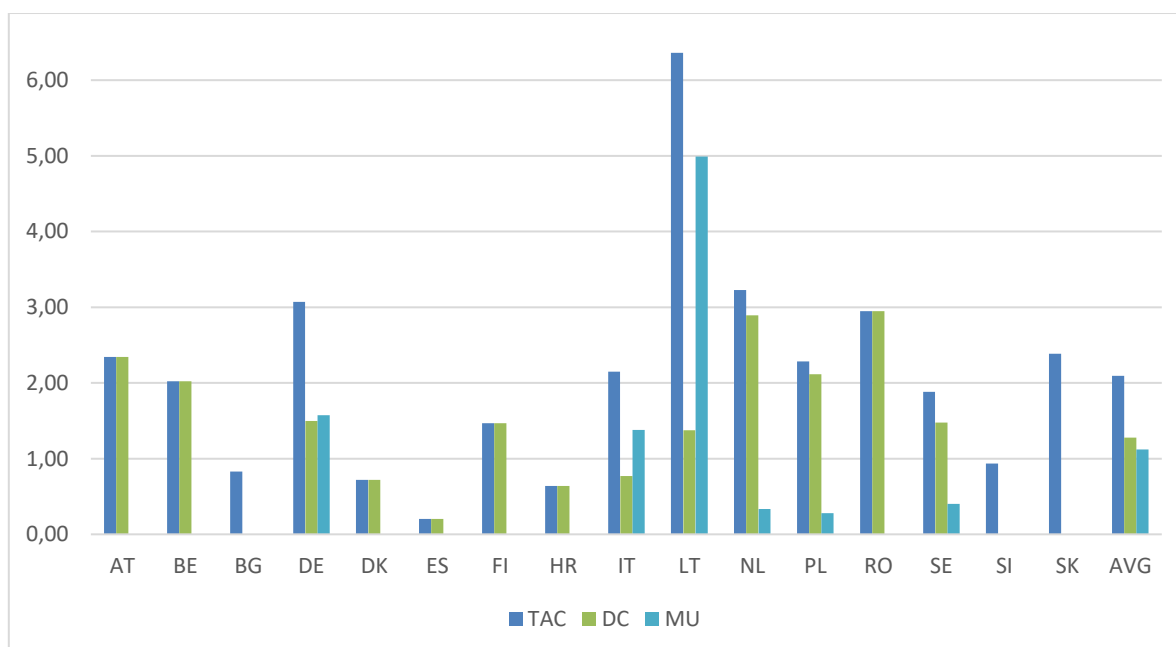
5.2 Level of charges for representative trains

- 55 In order to compare what a train with the same characteristics would pay in the different countries, two types of "representative" trains have been defined. The first one consists of a 1000t electric engine train, while the second is a 3000t train with an electric engine.
- 56 The 1000t "representative" train would pay on average €2.10/Trkm in the country sample (see the graph below). The train would pay the highest charge if running in Lithuania where the charge would amount to €6.36/Trkm, followed by the Netherlands (€3.23/Trkm), Germany (€3.07/Trkm), Romania (€2.95/Trkm), Slovakia (€2.39/Trkm), Austria (€2.34/Trkm), Poland (€2.28/Trkm) and Italy (€2.15/Trkm).
- 57 The 3000t "representative" train would pay on average € 4.13/Trkm in the country sample (see the graph below). The train would pay the highest charge if running in Lithuania where the charge would amount to €18.54/Trkm, followed Austria (€5.62/Trkm), Slovakia (€4.99/Trkm), Poland (€4.49/Trkm), and Finland (€4.41/Trkm).

²⁰ In Answers by IRG members to the questionnaire issued by WG Charges on international freight services S 2022 regulation (EU) 2020/1429 of the European Parliament and the Council of 07 October 2020 establishing measures for a sustainable rail market in view of the Covid-19 outbreak applied in form of regulation (EU) 2022/312 and regulation (EU) 2022/1036.

- 58 The figure below compares the difference in average charges between the two types of representative trains, showing that there are countries such as Denmark or Spain where the 3000t representative train would pay the same charge as the 1000t representative train, while in the rest of the countries, heavier trains pay more. Among the countries whose charges vary according to weight, Finland and Lithuania are the ones with the greatest variability, where 3000t trains account for approximately three times as much as a 1000t train.
- 59 Apart from these differences in the total amount of charges, there are differences in the composition of total charges. The following chart shows the composition of direct cost and mark-ups within total track access charge. On average, mark-ups represent a smaller share of the track access charge than direct costs. However, in Italy and (more clearly) in Lithuania, mark-ups are the major component of total track access charge.

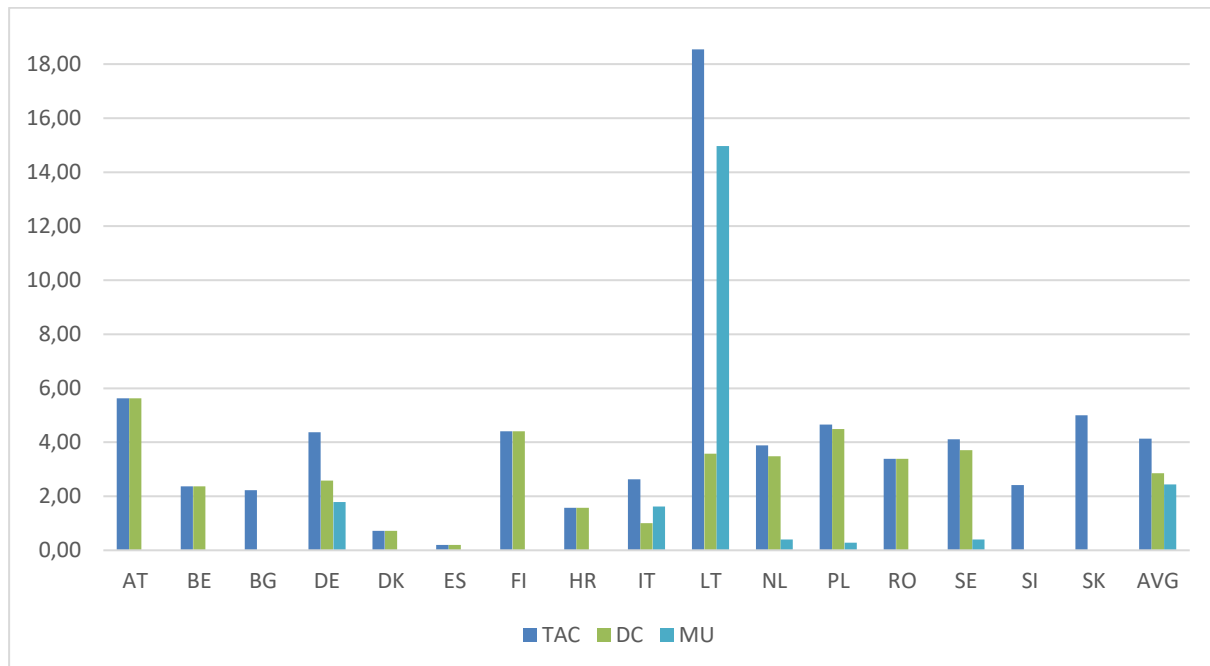
Figure 10 TAC, DC and MU (€/Trkm) for a 1000t electric freight train in 2022



Source: Answers by IRG-rail members to the questionnaire issued by WG Charges on international freight services²¹

²¹ Disclaimer: PL - The data provided for total charges and direct costs based charges are average values provided by the IM to the Polish RB regarding international freight trains (the average for all international freight trains, resulting from the train journeys for which it was possible to determine the average category of the railway line - knowledge of the route and the average category of the line determined on the basis of the category of individual sections of the train route is a necessary condition for estimating the fee for access to infrastructure). Direct cost based charges differ between intermodal and non-intermodal international freight trains as intermodal discounts apply. Total charges differ between intermodal and non-intermodal international freight trains as non-intermodal international freight trains doesn't pay mark-ups. The data on mark-ups are specific and only apply for non-intermodal trains that weigh more than 660 tons.

Figure 11 TAC, DC and MU (€/Trkm) for a 3000t electric freight train in 2022



Source: Answers by IRG members to the questionnaire issued by WG Charges on international freight services²²

- 60 France does not appear as the level of charges depends of the categories of tracks that are used. The two tables above in section 5.1 provide all the details regarding the charging grid for rail freight services in France for years 2019 and 2022.
- 61 The share of mark-ups relative to total track access charges is an indicator of the freight segment’s ability to bear higher charges. The fact that in many countries, no mark-ups are levied on freight services, may lead to the assumption that freight market segments can only afford paying direct cost based charges in these specific countries. Nevertheless, in Lithuania, where mark-ups make up the greatest share of track access charges among the countries shown, the freight market might be in a position to bear such amount.

6. Subsidies for railway undertakings for the access to infrastructure

- 62 This chapter describes and analyses the subsidy systems for rail freight services in the countries having answered to the questionnaire.

²² Disclaimer: PL - The data provided for total charges and direct costs based charges are average values provided by the IM to the Polish RB regarding international freight trains (the average for all international freight trains, resulting from the train journeys for which it was possible to determine the average category of the railway line - knowledge of the route and the average category of the line determined on the basis of the category of individual sections of the train route is a necessary condition for estimating the fee for access to infrastructure). Direct cost based charges differ between intermodal and non-intermodal international freight trains as intermodal discounts apply. Total charges differ between intermodal and non-intermodal international freight trains as non-intermodal international freight trains doesn't pay mark-ups. The data on mark-ups are specific and only apply for non-intermodal trains that weigh more than 660 tons.

By subsidies, in the present case, the analysis refers to those public contributions directed either to IM or RU. Subsidies intend to reduce the effective cost burden of RU as a result of paying track access charges. As practices vary widely, the following section provides examples for different countries.

⁶³ Rail freight traffic in Austria is basically supported in two ways. In Austria, there is a classic subsidy for the production systems of single wagon load traffic (per wagon), combined national/international freight traffic (per container) and national/international Rolling Highway (per truck). Furthermore, track access charges for providing manipulated freight traffic (i.e. single wagon load and combined traffic) have been either waived or reduced since 2020 when Regulation (EU) 2020/1429 (and its consolidated versions, respectively) came into force. In the first semester of 2022, they were completely waived and then reduced by 50 % for the second half of the year.²³

⁶⁴ In Croatia, the calculated direct cost based charge is subsidized between 65 to 70 percent, as the Croatian state lowers the track access charges to attract freight traffic and new undertakings to rail.

⁶⁵ In the UK, the incremental usage charge (which equals a direct cost based charge) is adjusted, if the suspension of freight wagons is 'track friendly'. Freight variable usage charges also vary depending on the commodity type being transported.

⁶⁶ In Spain, different public subsidies were granted to rail freight transport in 2022 although they were not directly aimed at reducing track access charges. On the one hand, there was the eco-incentive program, which sought to promote the use of rail freight transport by rewarding the savings in external environmental and socioeconomic costs generated by the use of this mode compared to road transport. This type of subsidy was intended to encourage rail freight companies to prioritize the use of electric traction systems and improve their efficiency. Thus, a company was eligible for more or less aid depending on the growth of its activity, the type of traction of the locomotives and the occupation of freight wagon. Therefore, more priority was given to traffic moving with electric traction than that using diesel locomotives.

It should be noted that the program was only to subsidize traffic on the Spanish core network²⁴, both on standard gauge or Iberian gauge, with all rail traffic being eligible for aid, with the exception of coal traffic.

On the other hand, there were two other types of subsidies focused on the purchase and renewal of rail freight wagons and the on-board implementation of the ERTMS system, which allows for interoperability.

⁶⁷ In Belgium, subsidies were and are still granted to freight RU (via track access charges reduction up to max 1.20 €/Trkm) as per 2023 in order to promote the modal shift. This is paid by the Belgian Ministry of Mobility via the IM.

⁶⁸ In the Netherlands a temporary subsidy was in place from 2019 until 2023 to stimulate rail freight transport. The subsidy was calculated per train kilometre, differentiated by weight class, following (almost entirely) the weight classes for the direct cost and mark-up. The table below gives an overview of the subsidies in the Netherlands in 2022 and how the amount related to the direct costs and the mark-up. The subsidy covered more than the mark-up for trains heavier than 160 tons and a part of

²³ More information about the situation in Austria can be found in Annex II of this paper.

²⁴ Translated from Spanish the core network is called "general interest railway network".

the direct costs. A subsidy ceiling was in place of € 17.8 million. The subsidies per train kilometre were recalculated if the total subsidies exceeded this ceiling.

Figure 12 Rail freight subsidies in the Netherlands in 2022

Weight class	Direct Costs	Mark-up	Subsidies
≤120 tons	€ 0.8149	€ 0.0943	€ -
121-160 tons	€ 1.0187	€ 0.1178	€ 0.08
161-320 tons	€ 1.2958	€ 0.1499	€ 0.39
321-600 tons	€ 1.8010	€ 0.2083	€ 0.95
601-1000 tons	€ 2.8930	€ 0.3347	€ 1.82
1001-1601 tons*	€ 2.8930	€ 0.3347	€ 1.46
1601-3000 tons	€ 3.4798	€ 0.4026	€ 2.11
≥3001 tons	€ 3.7732	€ 0.4365	€ 1.72

* This weight class is used in the subsidy, but not for the direct costs and mark-up.

Source: supplement 2 of the Network Statement 2022 of ProRail, dated 5th of July 2021 & "Tijdelijke subsidieregeling stimulering goederenvervoer per spoor".

- 69 In Germany, a track access charge assistance is a measure of the German government under its "Masterplan Rail Freight" to reduce the track access charges for freight. Such support has been in place since 1 July 2018. German state budget started in 2018 with a 175 million € envelope and for 2023 reserved 377 million € for this measure. This amount reduces the track access charges for freight in Germany by approximately 50%.
To further strengthen the place of railways in intermodal competition and to mitigate pandemic-related economic losses, the federal government enacted additional track access charge assistance for RU between 1 March 2020 and 31 December 2021 for long-distance rail passenger transport and rail freight transport and provided additional 627 million€ for this period. This increased the assistance rate to 99% for January through September 2021, to 88% in October and November, and to 87% in December 2021.²⁵
- 70 In Sweden, the Government Regulation for Environmental Rail Freight Compensation (SFS 2018:675) regulates a subsidy program for RU involved in rail freight. The purpose of the regulation is to support the competitiveness of rail freight as an eco-friendly alternative to road transportation. RU licensed in accordance with the Swedish Railway Market Act (SFS 2022:365) to operate on the Swedish railway system are eligible to apply for compensation. Applications and disbursements are processed on a quarterly basis, based on reported net-tonnage transported by RUs the prior quarter.
- 71 In Poland, there is a discount for intermodal transport in place amounting for 25% discount of the basic charge cost for the completed train service, applied by the railway IM for RU, if certain conditions are

²⁵ The European Commission approved the German assistance in July 2021 on the basis of EU Regulation 2020/1429 from October 2020, which gave all member states the legal means to reduce or subsidize track access charges during the pandemic.

More details about the subsidies and grants in Germany can be found in Annex II of this paper.

met. This value is reimbursed to the infrastructure manager by the State on the basis of separate agreements. In 2022, the amount of relief granted was 9.1 million euros.

- 72 In France, a "freight compensation" is intended to cover the difference between the direct cost of using the rail infrastructure and the charges actually paid by the rail freight companies (see tables above page in section 5.1).²⁶
- 73 In Italy, the "Ferrobonus" contribution, which is intended for shippers and logistics operators, was established by the Ministry of infrastructure and transport in 2017,²⁷ to support the shift of freight transport from road to rail. Some Italian regions have decided to adopt additional regional incentive measures based on the national "Ferrobonus" scheme. These regions provide, with their own resources, an annual "surplus" incentive for those trains departing from and/or arriving in their respective regional territories (with the exception of crossings only) by paying the contribution exclusively on the regional portion of the railway section. Operating agreements were concluded in 2017 for the management coordination of regional measures in addition to the national measure.²⁸ A second measure is in place, which is the track discount. Concerning freight railway companies, a decree-law of 2022²⁹ provides for an increase of € 5 million per year, from 2022 to 2027, of the resources already previously allocated:³⁰ *"The incentives are intended to compensate for the additional costs for use of the national railway infrastructure that are borne by railway companies as compared to other more polluting modes, to carry out the rail transport of goods having origin or destination in the regions Abruzzo, Lazio, Molise, Campania, Puglia, Basilicata, Calabria and Sicily"*. The resources that are not attributed to the RU pursuant to the previous sentence are assigned, within the limits of the available appropriations, in the form of a contribution to RU carrying out the transport of goods by rail on the entire national railway infrastructure, in an amount not exceeding the value of € 2.5 per trainkm. This contribution, which takes into account the lower external costs compared to road transport, is divided among the eligible companies in proportion to the trainkm travelled.
- 74 In Slovakia, there is a government strategy to support freight transport and to set financial incentives for the IM to decrease charges for selected trains.
- 75 In the case of Lithuania, the IM received a state subsidy for balancing income and expenses, related to a 38 % loss of freight volumes (due to the economic sanctions applied by the European Union and the United States of America against Belarus and the war in Ukraine started by the Russian Federation in February 2022). This did not affect the level of charges.
- 76 In the UK the Department for Transport (DfT) provides freight revenue grants to industry to encourage modal shift from road to rail or water. The scheme available to rail is "The Mode Shift Revenue Support" (MSRS) scheme. The MSRS (Intermodal) is supports the purchase of intermodal container movements by rail; and MSRS (Bulk and Waterways) for the purchase of bulk (non-containerised) freight traffic movements by rail and all freight movements by inland waterway. The MSRS given to

²⁶ More details about subsidies in France can be found in Annex II of this paper.

²⁷ By decree no 125 of 14 July 2017 (pursuant to article 1, paragraph 648, of law no 208/2015).

²⁸ Pursuant to article 3, paragraph 4 of decree no 125/2017.

²⁹ Art. 25, paragraph 2-bis of decree-law no 4/2022, converted into law no 25 of 28 March 2022.

³⁰ The resources had already been allocated under art. 1, paragraph 294, of law no 190/2014.

rail freight operators across Great Britain in 2022/2023 was approximately £19 million and £1 million for Scotland.³¹

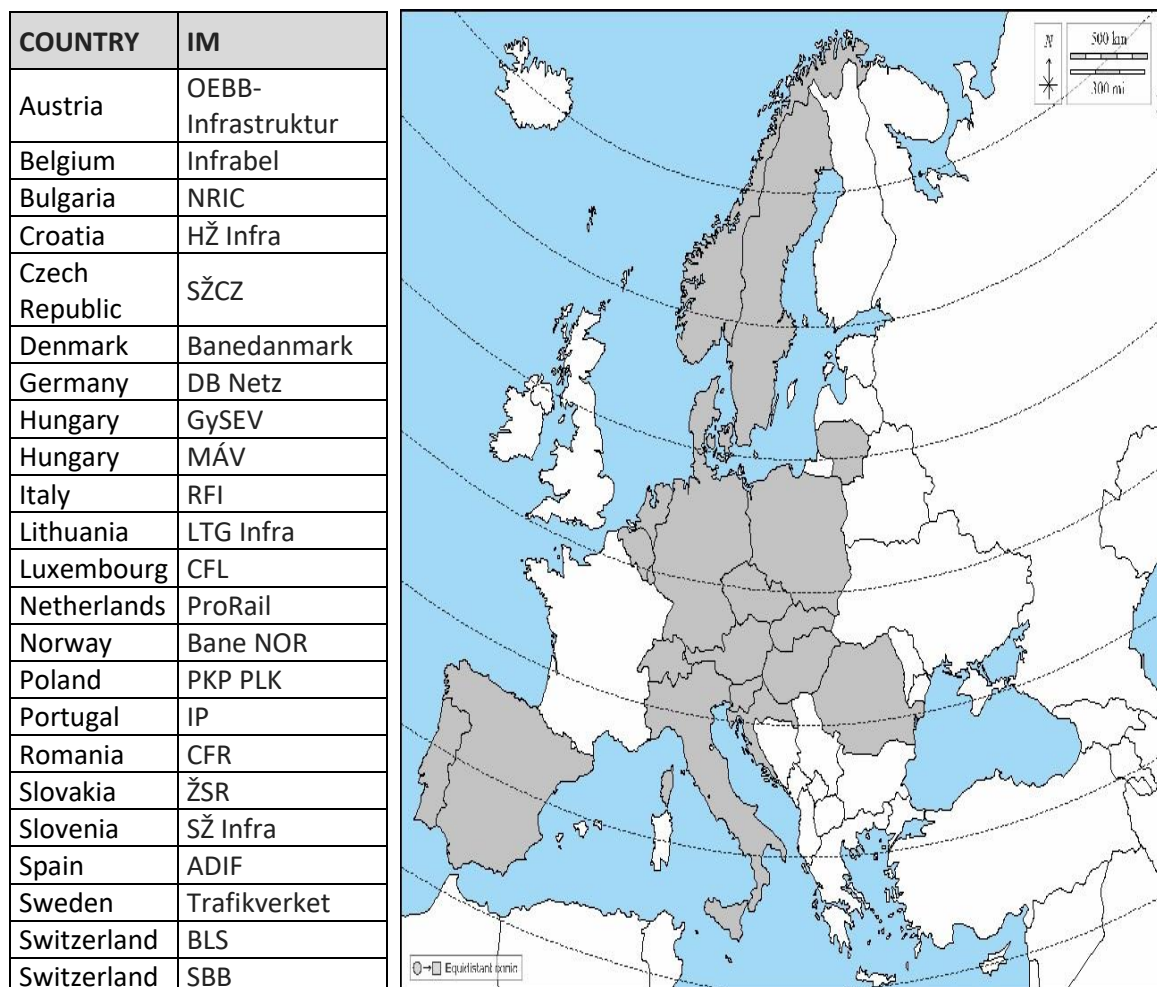
7. A tool to facilitate international freight services: the Charging Information System

- 77 The RailNetEurope (RNE) Charging Information System (CIS) is a platform for applicants and RU that provides information on charges related to the use of European rail infrastructure. It estimates the charge for the use of international train paths, stations and shunting. The web-based application is operated by RNE while the data input is provided by 23 European IM and allocation bodies participating in CIS. CIS therefore is an umbrella application for the various national rail infrastructure charging systems. It aims at giving transparency about charges for the use of infrastructure on EU level in a user-friendly way and in a single application instead of various different national systems.
- 78 To date the platform is able to handle queries for charges' estimates regarding the following countries and IM: ³²

³¹ For more information on "Mode Shift Revenue Support and Waterborne Freight Grant applications: overview" please see <https://www.gov.uk/government/publications/department-for-transport-delivers-more-grant-funding-to-transport-freight-by-rail/mode-shift-revenue-support-and-waterborne-freight-grant-applications-and-background-information#Grants%20Awarded>. For more information on "Review of revenue support freight grant schemes" please see <https://assets.publishing.service.gov.uk/media/5e3d8609e5274a08ea866d72/review-revenue-support-freight-grant-schemes.pdf>.

³² The main reason for the fact that not every IM is participating is limited availability of (human) resources on the IM' side, as the current system requires regular manual data input by the IMs.

Figure 13 Participating IM/Countries (marked gray), (Copyright by d-maps.com)



Source: RNE (table data), d-maps.com (illustration)

- 79 CIS is an informative web tool.³³ The information provided by CIS is purely indicative and has no legally binding character. The tool shall be easy and fast to use for everyone who needs quick information on charges for rail infrastructure use. RNE and the infrastructure managers members of RNE have consequently identified a business need for charging information and consider the CIS application an important tool for railway businesses across the whole European rail network. According to the feedback of RNE members, the accuracy of charges estimations of CIS is on average between 90% and 95%.
- 80 Access to CIS is free of charge³⁴, even though user registration is required³⁵. User groups entitled to use the platform include:
- RU
 - EU Institution or other international organisation
 - IM / Allocation Body

³³ Access to CIS can be found following this link: <https://rne.eu/it/rne-applications/cis/>

³⁴ It is funded by RNE members.

³⁵ There is no other language to choose than English. Charges for the use of the infrastructure are denominated in EURO.

- Shipper / Freight Forwarder / Combined Transport Operator
- University or other educational institution
- Other

81 Among the user groups, RU are by far the most frequent users followed by shippers, freight forwarders and combined transport operators. IM and EU institutions have a lower, but almost the same query frequency.

82 RNE describes the query process as a four-step approach:

- Step 1: User to choose train category, timetable year and calculation method.
 - a) The applicable train categories are:
 - Freight
 - Passenger
 - b) The relevant timetable year
 - c) The calculation method, which can either be
 - classical method: on the available network
 - RFC-based calculation³⁶: only on designated RFC infrastructure
- Step 2: User to specify the relevant parameters for the train path on each IM network, e.g.:
 - Origin
 - via station 1
 - via station 2...
 - and destination
- Step 3: Specify train parameters for IM 1 (in a second step for IM 2 and so on)
 - Train type, traction type, path type, supplement
 - Number of locomotives and wagons
 - Weight of locomotives, wagons and load
 - Eventually custom parameters such as flexibility or priority
- Step 4: View results: Estimations of distance (in km) and charge (including the overall charge, surcharges, shunting charges and stations charges) - The distance and charging components are estimated for each infrastructure manager network automatically by the system.³⁷

83 The charging information output is generated using a formula created by RNE using parameter values provided by the IM. The so-called CIS formula is checked to verify whether there are new parameters to be updated, such as e.g. the kilometre value, and where necessary adjusted every November, following the CIS Change Control Board for the new timetable year (TTY), e.g., November 2023 for TTY 2024 starting in December 2023.

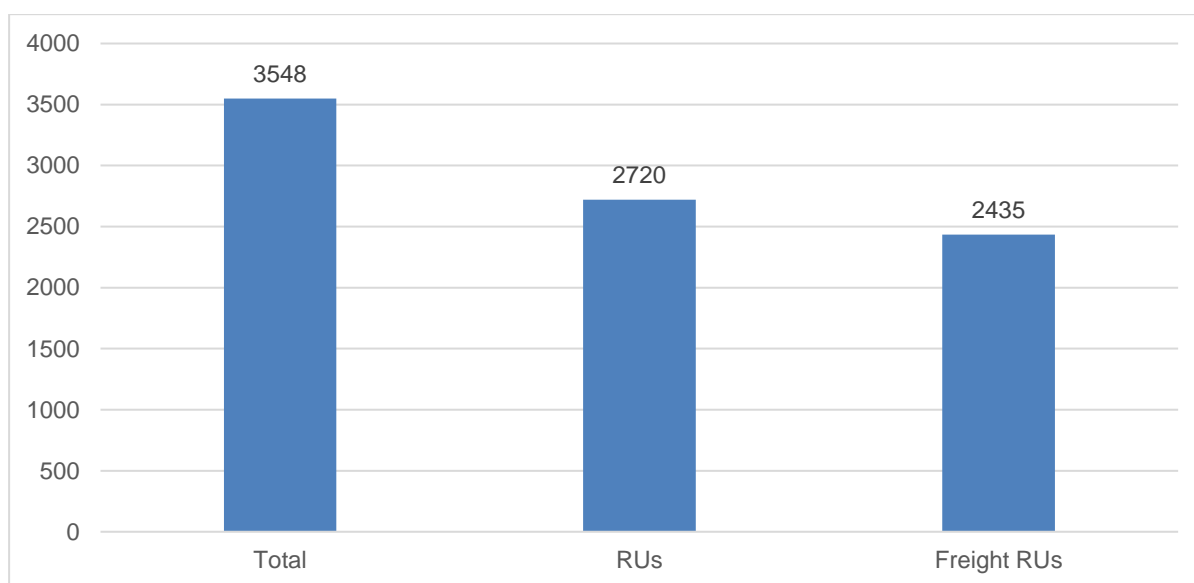
84 For the time being not all characteristics of the national pricing schemes are reflected in CIS, because the system uses a formula that does not take into account all national specificities, RNE is working on updating the formula to include additional national characteristics.

³⁶ Referring to RNE the corridor-based calculation is set to provide the train path on an interactive map.

³⁷ Referring to RNE there is also the option of contacting the OSS (One-Stop-Shop) of the concerned IM directly, being then able to take a detailed look at the line section level.

- 85 Every year around January and April, the participating IM provide updated data to RNE and the CIS platform. A follow-up evaluation is carried out throughout the year. A corresponding data quality report (Excel file) is sent to the data providers with the targeted information that needs to be updated.
- 86 RNE conducts an annual "**user satisfaction survey**" for its IT applications and CIS which took place in October 2023. The results of the survey was compiled in December 2023. Currently, RNE is focusing on increasing the data quality (e.g., adding missing information³⁸) to improve the CIS. In addition, RNE is looking into possible measures to reduce the manual effort of IM to feed CIS, which could potentially help to increase the number of infrastructure manger participating.

Figure 14 Requests/Queries for TTY 2022 (Total, RUs and Freight RUs)



Source: RNE

- 87 According to an evaluation of RNE, for timetable year 2022 (see **Fel! Hittar inte referenskölla.** above) there were 3,548 CIS queries in total, between which 2,720 requests were made by RU. Additionally, RNE reports that regarding the number of queries per train type, the platform was largely used by freight RU. The total number of queries per train type amounted to 2,720 of which 2,435 were made by freight RU. There is no information available about queries per train type or the type of travel (domestic or international).

³⁸ The data topology from the IMs must be up to date and complete. No segments can be missing in order to calculate the correct route setting. In addition, in order to guarantee a price for an international path, all involved networks must be included.

8. Freight services and border crossing issues

8.1 Legal requirements for international rail freight services

- ⁸⁸ A total of 14 countries have provided answers on legal requirements for international freight services. However, only 9 of them have provided some information about (special) legal requirements for national rail freight services or even for international rail freight services (if any) -e.g. for the required safety system, type of goods (like nuclear goods) and braking system. Additionally a question regarding reasons explaining delays at border crossings was added. Five regulatory bodies have indicated that they could not give any information.
- ⁸⁹ Generally legislation imposes specific requirements in relation to dangerous goods, environmental and tunnel restrictions as well as specific technical requirements, when crossing a border. Beyond these requirements, some countries may have -additional obligations.
- ⁹⁰ In many European countries, there are also regulations from national regulations and specific rules from the IM applying to technical and functional features and imposing restrictions based on the characteristics of railway lines in relation to mass of vehicles, wagon loads and dimensions. Similarly there is additional national legislation governing safety principles and criteria for the operation of rail freight services. These differing legal requirements become mainly relevant and burdensome, when international trains cross borders.

8.2 Specific examples of case-studies regarding border crossing issues

- ⁹¹ The legal requirements for freight services described in Chapter 8.1 can lead to border crossing requirements, which can affect the performance of international freight services. In our questionnaire we have looked at some examples of case studies regarding the crossing of specific borders. These examples are purely illustrative and concern only specific border points in a certain moment of time. They are therefore not intended to describe the general situation in the countries covered, as they represent neither all border crossing points nor the activity of a single border crossing point over a longer time.³⁹
- ⁹² In the questionnaire IRG-rail members were asked for information about border-crossing examples, indicating the name of the border-crossing, the involved country as well as information on delays and reasons for the delays.
- ⁹³ A total of 12 countries have provided information and examples about border crossings:
- Netherlands:
 - Belgium “Roosendaal-Essen”
 - Germany “Zevenaar-Emmerich”

³⁹ It is also to be seen that the maintenance or renewal needed to maintain a given level of infrastructure service quality or to improve it may temporarily have a negative effect in terms of minutes lost for RU. These delays will also be reflected in delays at borders.

- Germany “Venlo-Kaldenkirchen”
- Germany “Oldenzaal - Bad-Bentheim”
- Norway:
 - Bjørnfjell: A major crossing point for iron ore trains with more than 4000 crossings each year
 - Kopperå: A small crossing point with a total of 3 train crossings during 2022
 - Magnor: Another major crossing point with 3 000 crossings each year
 - Kornsjø: Crossing point with 700 crossings each year.
- Sweden: Denmark “Lernacken-Kastrup”
- Slovakia: SŽCZ – ŽSR “Kúty”
- Romania: Ukraine “Halmeu”
- Poland: Czech Republic “Chałupki – Bohumin”
- Lithuania:
 - Latvia “Rokiškis-Eglainė, Joniškis-Meitenė, Turmantas-Kurcums, Mažeikiai-Rengė”
 - Poland “Mockava-Trakiszki”
- Italy: Austria “Brennero”
- France: Italy “Modane”
- Finland: Sweden “Tornio – Haaparanta”
- Denmark: Sweden “Peberholm”
- Croatia: Hungary “Koprivnica”
- Germany:
 - Austria “Kufstein”
 - The Netherlands: “Bad Bentheim”

⁹⁴ Information from 11 countries was provided about the time loss at those specific border crossings for a given period of time. The differences in the delay minutes are quite significant across the observed border crossings. For example, Norway reports in one border crossing point a delay of 22 minutes and in another point a delay of 98.3 minutes for 2022. The weighted average time lost with respect to the number of trains in the four border crossing points mentioned by Norway is 52 minutes. These delays are not caused by regulatory differences but by technical standard differences or operational differences between Norway and Sweden like loading operations, loading irregularities or preparation of the trains. It should be further noted that the data provided by Norway does not differentiate between freight and passenger trains. In Slovakia, the provided data shows that the time lost depending on the border crossing point varies from 55 to 73 minutes and for Lithuania from 166 minutes to 263 minutes for the border crossing points covered. The weighted average of time lost per train at the border crossings for which information was collected and for the periods of time covered is 104 minutes.⁴⁰

⁹⁵ In Germany, at the border with The Netherlands at Bad Bentheim, many trains approach the border at times other than those according to the agreed schedule. This is mainly due to the fact that many freight trains travel with delays. Further, many times these trains tend to block tracks in Bad Bentheim, as a result for example of a lack of train drivers or the need for traction unit changes, vehicle technical

⁴⁰ This weighted average is calculated in function of the number of trains yearly involved by delay at the specific border crossing points reported

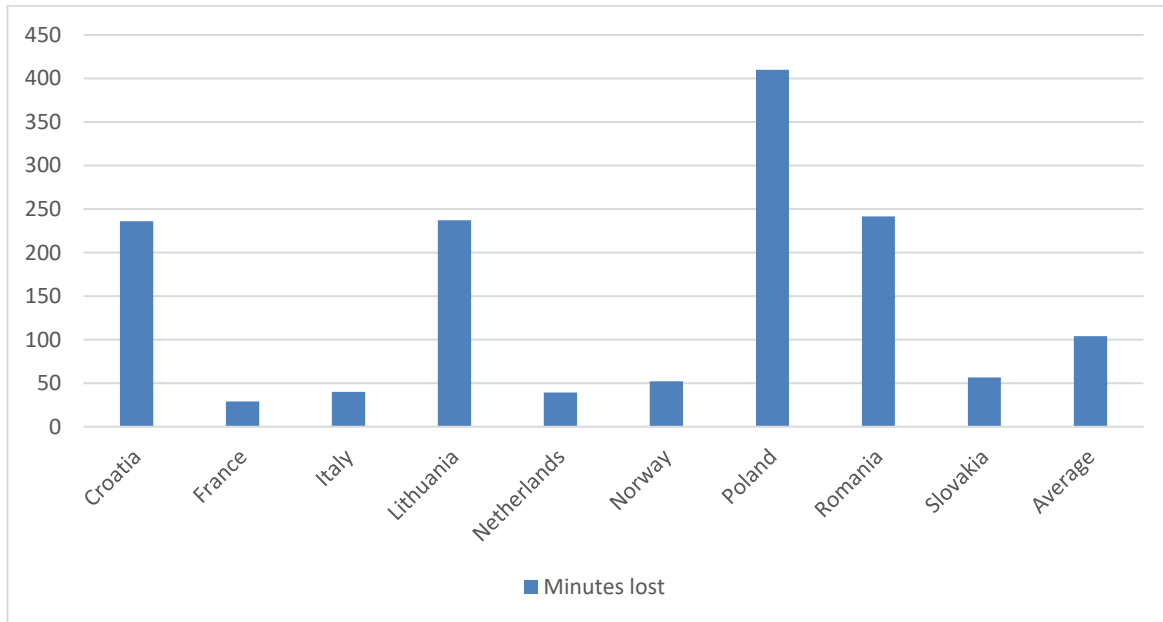
examination or unscheduled train paths. In general, the capacity of the German rail network is restricted due to many temporary capacity restrictions in addition to those included in the working timetable (short notice maintenance works organised after timetable construction).

It is to note that according to the network statement of DB Netz AG a train path can be used up to a delay of 20 hours. Nevertheless, in the Netherlands a new train path is required if the train starts at the starting (border) station with more than 6 minutes delay. Timetable management in this respect is not harmonized.

Some other problems are also reported for ad-hoc-paths, especially if different RU are responsible for the path request and the operation in the neighbouring country. At the border between Germany and Austria in Kufstein, the freight trains on ad-hoc paths need a new train number RU. These ad hoc trains are running with national train numbers in Germany, meaning that the Austrian train number is not used continuously.

- ⁹⁶ Generally, some technical issues have also been reported, which can lead to delays at border crossings. For example, difference of traction of gauge can lead to a change of locomotive at border crossings. Issue on wagons have also been reported.
- ⁹⁷ The graph below shows the time lost reported for the specific border crossings points covered and for a given period of time. The time lost for each country is calculated on basis of the weight average (in function of the number of trains) of the time lost at the border crossings points reported by the countries mentioned in the graph. It must be noted that the information on time lost at the border are only related to the example of one border crossing provided by the respective countries.

Figure 15 Time lost at some specific border crossing points and for a given period of time(2022)



Source: Answers by IRG members to the questionnaire issued by WG Charges on international freight services

98 All the countries that submitted information on border crossing points also provided information on the number of trains affected by delays at border crossing per year.⁴¹ There are also significant differences between countries and within a country depending on the border crossing points. Eventually the information provided could be compared to the number of trains that cross the border at that point to get an idea of the percentage of trains delayed. For instance, Slovakia mentions 8,442 trains affected at one crossing and 8,246 trains at another point and Norway mentions three trains affected at a certain crossing, which is a very low number, and 4,209 trains at another crossing. For Sweden and Denmark, the same border crossing, the Oresund bridge-border crossing. There are no delays due to border procedures over the Oresund bridge-border crossing. The harmonisation of technical and operational standards to allow for a barrier free flow of transport is regulated in bilateral agreement between the two countries and upheld by a co-owned consortium that operates as the IM. This could be taken as a good example on how to alleviate cross-border rail freight requirements.

9. Non-charging related barriers for international freight services

99 With the following chapter the working group charges tries to complete the picture on the barriers and restrictions for international freight trains. IRG-rail working group access has been asked to give a short overview on the non-charging related barriers for international freight services.

⁴¹ Here it is only reflected the situation at some cross border points and for specific periods of time.

- 100 The railway industry in Europe faces specific technical and interoperability barriers arising from the differences existing between a number of technical specifications and peculiarities of national railway systems, which hamper its development towards a single European railway area (SERA)⁴². Europe's different national rail networks, spanning along the territories of the Member States with different regulatory frameworks and infrastructures, bring upon unique challenges to legislators, regulators and operators. A comprehensive understanding of these non-charging related barriers is essential for devising efficient and effective strategies to foster the growth of the railway transport market in Europe.
- 101 There are several technical and operational barriers hampering in particular rolling stock compatibility. They include:
- **Different signalling systems:** national railway systems across Europe have been implemented over time with a variety of different signalling systems, often referred to as legacy systems. But differences can also be detected amongst a number of more modern installations of signalling systems, notwithstanding the pre-requisite for interoperability since the start of the liberalization reform at EU level in the 90's for new infrastructure or vehicle projects and renewals. The harmonization of these systems is a complex process as, ongoing for several years, European countries have often shown an inertial tendency to maintain their own set of national technical standards and rules, also in correlation with the configuration and specialisation of the respective national railway industries. This diversity complicates significantly the deployment of standardized signalling technologies, including ERTMS/ETCS, and seriously hinders the development of interoperability.
 - **Different voltage and electrification systems:** railway electrification systems vary across European countries, with differences in voltage and power supply subsystems. This diversity makes it challenging for RU to operate seamlessly across borders, as this requires complex and costly interfaces between the different national systems such as electrical multisystem equipment both track-side and on-board trains wishing to operate along cross-country routes.
 - **Lack of uniformity in infrastructure characteristics along an international corridor** (i.e. track gauges, platform heights, slope of the lines, ...). Aligning these elements to create a more standardized and interoperable railway network is essential for promoting efficient cross-border transportation.
 - **Different communication protocols:** inconsistent communication protocols among railway control and management systems hinder efficient data exchange. Standardizing these protocols is vital for ensuring that critical information, such as train movements and maintenance data, can be shared seamlessly across borders.

⁴² The SERA is an EU-wide system of rail networks to allow the expansion of the rail sector based on competition, technical harmonisation and joint development of cross-border connections, by:

- opening and restructuring the rail market
- increasing competitiveness and creating a level playing field for rail companies
- developing infrastructure to ensure interoperability
- improving efficiency in infrastructure use and safety
- ensuring fair prices for consumers

(see reference: <https://www.consilium.europa.eu/en/policies/rail-transport-policy/>)

- **Fragmentation of national regulatory frameworks:** most European countries have a tendency to keep unchanged their respective regulatory frameworks for railway operations, safety, and infrastructure. Harmonizing regulations is essential to facilitate cross-border operations and promote a unified approach to safety standards and certification processes.
- **Technical checks at border stations and mandatory checks in Member States:** technical checks of trains, wagons, and load securing at the border stations are necessary for safety and compliance with national regulations, but they also add another layer of complexity and time consumption to cross-border railway operations. These checks can be required after arrival and before departure whenever trains experience long waiting times, at regular distances or time intervals, and sometimes they need to be performed on both sides of the same border. For closely situated borders a RU will need to undergo more checks in a shorter timeframe. Different countries have their own regulations for these checks, which vary in frequency and rigor. This inconsistency creates inefficiencies and causes delays. Addressing this issue requires the alignment and harmonisation of regulations across European countries.

Other different issues can be summarised as follows:

- **Digitalisation and data sharing challenges:** embracing digital technologies for railway operations necessitates effective data sharing. However, concerns related to data governance, confidentiality, and ownership pose obstacles to establishing a unified approach to digitalisation and data exchange across European railway networks.
- **Cross-border coordination:** efficient cross-border coordination is essential for optimizing train schedules, maintenance activities, and contingency management. However, differences in operational practices and coordination mechanisms between European rail operators can hinder the development of a cohesive and interconnected railway system.

¹⁰² Addressing these technical/operational barriers requires collaborative, synergic and coordinated efforts from all the involved parties, both national, such as Ministries, Safety Authorities and Regulatory Bodies, and international, such as the European Commission, the European Agency for Railways (ERA) and the European standardization bodies, but also from railway operators and industry stakeholders. A global push towards standardized systems, unified regulations, and streamlined cross-border processes is essential to unlock the full potential of the European railway market, fostering sustainability, efficiency and innovation in rail transportation across the SERA.

¹⁰³ During the last three decades, the liberalisation, the expansion and the harmonisation process of the rail sector in Europe experienced a level of development lower than expected, due – amongst other things - to the following main constraints:

- fragmentation of the European railways due to the recourse to legacy, stand-alone and not interfaceable national systems and subsystems;
- low degree of competitiveness, efficiency, flexibility and reliability of rail transport services, in particular for freight transport.

¹⁰⁴ In order to implement and strengthen the EU rail transport policy, the EU legislator adopted four railway packages between 2001 and 2016 aimed at:

- opening the railway market to competition;

- increasing the interoperability of national railway systems (also by means of the implementation of the Technical Specifications for Interoperability);
- defining the reference framework for harmonised safety and market regulation of the SERA.

105 In 2018 the European Commission (EC) launched an initiative called Issues Logbook (ILB)⁴³ to accelerate progress of interoperability on the European railway network and stimulate the growth of international rail transport volumes and modal share. For this purpose, the Issues Logbook was initially set up as a list including the technical issues that create barriers to cross border rail operations and that could be eliminated without the recourse to time consuming legislative intervention at EU level.

106 The major contributors called to participate to the meetings convened by DG Move were ERA, ministries, regulatory bodies, national safety authorities, IM, RU, transport associations or other actors of the rail sector and industry.

107 The work started from the identification of 15 top priority “issues” (i.e. technical/operational barriers) and the launch of a pilot project for each issue with an action plan in order to monitor the progress in reducing/eliminating the correlated barriers.

108 A progress update was produced and discussed every 6 months by DG Move and a yearly meeting with the stakeholders was planned and convened to discuss the registered progresses towards the resolution of the issues and the consequent updating of issue prioritization (where relevant), the closure of resolved issues, the inclusion in the logbook of new issues and their prioritization.

109 A consultant was also involved to provide technical support and to identify the related economic impact of each issue.

In November 2023, DG Move formally closed the first step of ILB activities, dedicated to the identification of the solutions to the issues by means of soft law and/or technical/safety/market regulatory provisions and/or cleaning up of the so called “national rules”, meaning that solutions for removing all the 15 issues were identified. As outlined by DG Move, most solutions consist in the modification or removal of national rules, in line with the requirements of the 4th Railway Package, as not all Member States have yet lifted or modified national rules flagged by ERA as non-compliant with the EU regulatory framework.

110 However, the implementation of solutions identified for solving each different issue is still insufficient, as it appears that:

- a) National rules cleaning-up in many cases is not yet finalised;
- b) Some operational processes remain unchanged, in most cases due to multiple reasons:
 1. missing awareness of European solutions;
 2. problems with adoption of procedures and long time required to change;
 3. existence of national guidelines promoted by NSAs;
- c) Specific network implementation aspects (e.g. brake percentage calculation) need to be further developed by stakeholders, mainly IM in conjunction with RU.






















111 Since it is now up to the stakeholders to implement the solutions identified for the first batch of 15 issues, DG MOVE has asked stakeholders to point out any additional and new technical/operational

⁴³ More information and details can be found in the following web page: https://transport.ec.europa.eu/transport-modes/rail/interoperability-safety/interoperability/operation-and-traffic-management_en.







issues raising barriers within the market, in order to speed-up the cleaning-up process of national rules and open a second phase of the ILB process.

112 A summary of the ILB 1st phase conclusion is hereinafter reported:

Figure 16 Issues List ILB 1st phase conclusion

No	Issue Title	Geo, occurrence	Type of solution	Solution	Status
1	Braking sheets	Several EU MS, CH	 New European standard	International brake sheet	Closed
2	Braking performance	Several EU MS, CH	 New European standard 	Brake position rules, Brake percentage calculation	Closed
3	Tail lights vs. plates	BE, FR, IT, PT, ES	 National Rules Clean-Up,  Retrofitting of rolling stock	Plates, front lights	Closed
4	Train composition – Harmonisation of wagon list	Entire Europe	 New software solutions (ensuring TSI application) 	TAF-TSI TCM; IT solutions; Unified Braking Scheme (UBS)	Closed
5	Train composition – Working handbrake last wagon	PR, RO	 National Rules Clean-Up 	TSI OPE, AMOC	Closed
6	Train composition – No push 6 axles wagon	RO	 National Rules Clean-Up	TSI OPE	Closed
7	Train composition – Buffer wagons	HU, RO, BG	 National Rules Clean-Up	RID	Closed
8	Technical checks at border stations	RO, HU	 Operation, Several	National Rules Clean-Up, AMOC	Closed
9	Mandatory checks in MSs	RO, IT	 National Rules Clean-Up 	National Rules Clean-Up, AMOC	Closed
10	Operational implementation of the traffic in ERTMS	Entire Europe	 Tackled in other framework	→ ERTMS Deployment Plan, Baseline 3 CCS TSI	Closed
11	New train number	HU, RO	 National Rules Clean-Up	TAF-TSI TCM; IT Solutions; Elimination of train checks due to formal reasons	Closed
12	Exception from operational rules	Entire Europe	 Tackled in other framework	Rerouting of trains à Int. Contingency Handbook	Closed
13	2 people cabin crew	IT, RO, BG, (ES)	 National Rules Clean-Up (IM Rules, Other)	OPE TSI, Cleaning-up of national rules	Closed
14	Equipment of border stations with commutable electric power supply	All MS borders with system changes	 Technical solution	Concept for an ideal border section, modified processes	Closed
15	Real time communication and harmonization of train composition message (wagon list)	All MS or RFCs	 New software solutions  Application of TSI	TAF-TSI TCM; IT solution; Train identifier (TID), Train matching via train composition	Closed

Legend:

-  New European standard
-  New Software solution(s)
-  Other technical solution
-  National Rules Clean-up, Applic. of EU Legislation
-  Change of operational process
-  Tackled in other framework

Status

Closed = Solution found under ILB scope

Source: DG Move, presented at the ILB meeting held in Brussels on 27 November 2023

113 It is worth mentioning that issue 10 and 12 were declared closed by referring to activities respectively dealt with by other international discussion fora, such as those related to the ERTMS Deployment Plan and to the updating of the International Contingency Handbook.

114 The analysis of the 15 issues encompassed also an analysis of the annual economic impact in European area of each of these issues on the railway sector, whose results are listed in the table below.

Figure 17 Issue Titles and Economic impact (EUR million)

n°	Issue Title	Economic impact (EUR million)
1-2	Braking	60.5 (*)
3	Tail lights vs. Plates	17.4 (*)
4-15	Harmonization of wagon list – RT communication and TCM harmonisation	300.0 (*)
5	Working handbrake last wagon	3.0 (*)
6	No push 6-axle wagons	11.1 (*)
7	Buffer wagons	27.3 (**)
8-9	Technical checks at border stations – Mandatory checks in MSs	31.1 (*)
11	New train number	77.0 (*)
13	2 people cabin crew	189.2 (*)
14	Commutable power supply in border stations	127.9 (*)

(*) Updated by 2022 values of trains and RUs and by 2021 Social-economic variable (Source RNE)

(**) Updated by 2021 Social-economic variable (Source RNE)

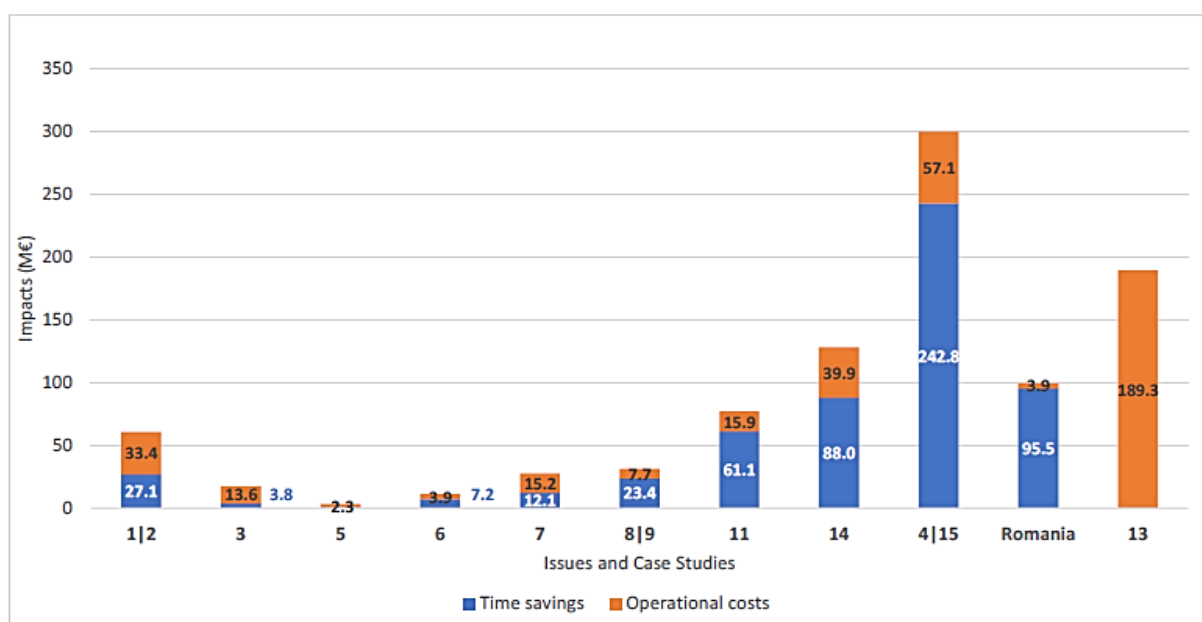
Source: DG Move, ART-IT elaboration on data presented at the ILB meeting held in Brussels on 27 November 2023

115 This analysis shows that the issues with the greatest impact are those related to the harmonisation of the wagon list, RT communication and TCM harmonisation, as well as the requirement of two drivers and the commutable power supply in border stations.

116 The analysis also estimated the overall impact of the 15 issues in terms of time savings and operational costs per year, as shown in the following diagram.

Figure 18 Estimated economic impacts at EU level discriminated per issues updated to 2022

Issue	Total (EUR)
1|2	60,478,121
8|9	31,115,841
4|15	299,947,552
3	17,441,054
5	3,041,447
6	11,144,212
7	27,340,549
11	76,988,779
13	189,256,980
14	127,874,257
Total	844,628,791
Romania	99,366,188



Consortium calculations based on:
Eurostat: Price Purchase Parity (PPP) and GDP per capita per Member State
RNE data for the number of trains and Rus in the selected crossborders

Source: DG Move, presented at the ILB meeting held in Brussels on 27 November 2023

117 From the Regulatory Bodies' point of view, the presence and influence of non-charging related barriers can be monitored through the following work streams:

- Monitoring of RFC network and attendance to the meetings of the Railway Advisory Groups (RAGs) and Terminal Advisory Groups (TAGs)
- Yearly review of network statements
- Ex-officio investigations or investigations upon complaint
- Regulatory Bodies participation in the relevant legislative procedures at national and European level to promote early-stage harmonisation

For instance, rolling stock congestion at border stations can be often detected, due to:

- a lack or largely insufficient usage of the same interoperable locomotives for operating international freight across different countries;
- increasing restriction (and lasting dismantling) of capacity, i.e. tracks, in border stations;
- a lack of communication between involved RU, i.e. RU running a train to the border station missing to properly arrange for the train to be taken over by another RU.

118 Operational inefficiencies can also be observed (e.g. dispatching/language issues) originating from a lack of coordination between RUs established in different countries and linked by commercial partnerships to run international freight trains.

119 To conclude, it seems clear that only through a coordinated, progressive and harmonized action involving all the relevant actors of the railway sector (European Commission, ERA, Ministries, National Safety Authorities, regulatory bodies, IM, RU, sectoral associations, etc.) it will be possible to progressively reduce/eliminate in a reasonable time horizon such non-charges related barriers, with a view to finally deliver to the European citizens a truly single, harmonized and competitive European railway area.

10. Cost related barriers to entry: outcome of interviews with leasing companies for rolling stock

120 With a view to gain a better understanding of the questions related to rolling stock for the development of international rail freight services, the working group charges conducted a series of interviews with rolling stock leasing companies and AERRL (association of European rail leasing companies). These discussions were particularly informative and are summarised in this section. The following comments are based entirely on the interviews conducted. They should therefore be considered as being the opinions of the interviewees and not necessarily of the IRG-rail.

10.1. The rail leasing market: general introduction

121 The present paper's information is completed by the view of the European leasing companies for rolling stock. The working group charges interviewed European rail leasing companies as they have a global and transversal view of the European rolling stock market that add to the information in this paper on international freight services. Leasing companies can provide valuable information about the costs related to the rolling stock materials and any additional costs for international services.

122 After the liberalisation of the rail transport markets the business model of leasing of rolling stock came up and gained a first momentum after the first railway package in 2001. Upcoming competition in the rail transport markets has intensified the need for rolling stock for the new market players wanting to compete with the existing incumbent RU. New competitors welcomed the offer to lease rolling stock as rolling stock investments tend to be very high and a barrier to entry to the rail market. The possibility to lease rolling stock helped to enter the market. Especially the fourth railway package of 2016 was centred on interoperability (especially on ERTMS), the SERA and the final opening up of rail service

markets Europe-wide.⁴⁴ The precondition of a liberalised market is a prerequisite for the business of rolling stock leasing, as the lessors provide modern traction especially, even not solely, for the competitors and therefore contribute to the development of competitive market structures. In 2024, the leasing of rolling stock is a rather well established process, used by new and old competitors to optimize the use of existing fleets, in times of shortages of own rolling stock or still for new services.

123 In 2023, the relevant fleet of locomotives operating in Europe was 30,200 units.⁴⁵ The following numbers of shunting and mainline locomotives were operated in EU member states, Norway and Switzerland:⁴⁶

- Approx. 10,750 units are shunting locomotives, almost exclusively diesel⁴⁷.
- Approx. 6,050 locomotives are operated in mainline passenger traffic of which more than 80% are electric locomotives⁴⁸.
- Approx. 11,350 locomotives are operated in mainline rail freight services. Thereof, around 8,500 locomotives are electric mainline locomotives, 2,650 are diesel mainline locomotives and approx. 200 locomotives are alternative drive. In total and currently the share of locomotives being equipped with alternative drive technology is under 1%⁴⁹.

124 The locomotive fleet has the following characteristics:⁵⁰

- Locomotives in Europe are 28 years old on average, while diesel mainline locos are 37 years on average⁵¹.
- The three main rail markets are Poland, Germany and France.

125 In comparison to this, the locomotive leasing market shows the following characteristics:⁵²

- Approx. 3,650 leasing locomotives (mainline and shunting) are on the leasing market⁵³.
- AERRL members have a share in the market of leasing locomotives of 70%.
- Leasing companies offer different leasing solutions such as dry leasing (without maintenance included - dry lease) or full-service leasing (maintenance included - wet lease) and solutions in between (soggy lease where generally the lessor is responsible for the heavy maintenance and the lessee for the operating maintenance).
- Full service options are mainly offered together with full service offers of manufacturers.
- Leasing locomotives are mainly operated in rail freight services, under both electric and diesel traction. Approx. 18% of the electric freight mainline locomotive base are leasing locomotives

⁴⁴ Study SCI Verkehr 2021, European rolling stock leasing fleet- Market overview for freight and passenger assets, for AERRL, Brussels, pg. 5+6. Updated in February 2024

⁴⁵ This number excludes 2,100 units that are operated by companies based outside Europe, study SCI Verkehr 2021, pg. 7.

⁴⁶ Study SCI Verkehr 2021, pg. 7.

⁴⁷ Study SCI Verkehr – Update of February 2024.

⁴⁸ Study SCI Verkehr – Update of February 2024.

⁴⁹ Study SCI Verkehr – Update of February 2024.

⁵⁰ Study SCI Verkehr 2021, pg. 7.

⁵¹ Study SCI Verkehr – Update of February 2024 slide 6

⁵² Study SCI Verkehr 2021, pg. 8.

⁵³ Study SCI Verkehr. Update of February 2024.

and the fleet of diesel and alternative drive freight locomotives has a share of around 10% of leasing locomotives.

Table 6 Fleet of locomotives and share of leasing locomotives including characteristics⁵⁴

Criteria	Item	Railway companies¹	Rolling Stock Lessors
Installed base	Units	24,500	3,650
Electric traction	% of total fleet	47%	61%
Diesel traction	% of total fleet	51%	35%
Alternative drive	% of total fleet	2%	4%
Average age	Years	38	18
ETCS-equipped locomotives	% of mainline fleet	15%	48%
Cross-border locomotives	% of mainline fleet	20%	65%

¹Including manufacturer leasing pools

126 The following paragraphs display some more relevant figures around leased locomotives.⁵⁵

- More than 150 RU⁵⁶ lease rail freight or passenger locomotives and approx. 75% of them are competitors to former state railways.⁵⁷ Many of the companies lease less than ten locomotives⁵⁸.
- 25% of the lessees are state railways. Some of them lease locomotives in longer term leases, while other only lease them occasionally to cover shortages in availability of own rolling stock.⁵⁹
- Incumbent RU are the biggest lessees. The French incumbent is having the largest leasing fleet with more than 100 locomotives, while the Belgian Lineas is second largest⁶⁰.
- In Germany, 30% of the mainline locomotive leasing fleet is operated, while in France it is 15% and in Poland 10%. In different other European countries a significant leasing fleet is operated, too⁶¹.

⁵⁴ Study SCI Verkehr 2021, pg. 9.

⁵⁵ Study SCI Verkehr 2021, pg. 9+10.

⁵⁶ Study SCI Verkehr 2021 pg. 9.

⁵⁷ The study does not differentiate between affiliates of state railway companies that offer services in another Member State of the European Union. For the SCI study they are “competitors”.

⁵⁸ Study SCI Verkehr 2021 pg. 9.

⁵⁹ These data came from SCI Verkehr study of 2021. In interview, we received slighter different figures (rather 70-30%)

⁶⁰ Study SCI Verkehr 2021 pg. 9.

⁶¹ Study SCI Verkehr 2021 pg. 9.

- Lessors increased and modernised their fleets in the past years to a considerable extent: while from 2010 to 2016 lessors only accounted for 25% of the new locomotive deliveries, from 2017-2023 their share in new deliveries already accounted for 42% of total new locomotive deliveries.

10.2. Interviews with rail leasing companies.

¹²⁷ The working group charges met the European leasing association and four European rail leasing companies. The information in this chapter is based on interviews with:⁶²

- AERRL
- Akiem
- Alpha Trains
- Railpool
- Euro Loc pool

¹²⁸ These companies represent 44% of the fleet of locomotives owned by the all European rail leasing companies. Most of these leasing companies are present in an important number of countries (up to 22 countries). Working group charges raised the following topics enumerated in the bullet points to these companies:

- Barriers for the development of the rail freight markets.
AERRL and the rail leasing companies have expressed their views about the barriers for developing the international freight services.⁶³ They had a special focus on the rolling stock materials and the barriers for boosting the interoperability of their assets. The leasing companies have also a good understanding of the difficulties that the RU's, which are their customers, can have for developing their cross border services.
- Development of the European rail freight market
Private operators and their business are the biggest growth drivers for the leasing companies. The leasing companies expect a growth for locomotives homologated on the different European corridors and particularly Netherlands to Italy, Netherlands to Poland and Scandinavia and towards Germany.
The market growth of the freight market was assessed by one leasing company around **1.5% in ton-km per year**, and the market growth of the rolling stock materials at around **3-3.5 % per year**. The same leasing company considers that there is a strong growth potential in east and south east Europe. The economic growth is stronger and the fleet much older than in other countries.
The client basis of the leasing companies comprise approximately 1/3 incumbents and 2/3 new entrants (including the foreign incumbents).
The range of maturity of lease contracts is quite high from few months till 10 years with an average of 3 years.

⁶² The chapter therefore is based on the views of the interviewees and not necessarily reflects the opinion of IRG-rail members.

⁶³ These views reflect the opinion of the leasing companies and not necessarily IRG-rail members' opinion.

- Description and characteristics of the fleet

As mentioned in chapter 9.1 the European leasing companies own overall a fleet of 3,650 locomotives. The member of AERRL own 70% of this fleet (2555 locomotives).

Each leasing company interviewed (at the exception of one of them) has a fleet of at least 500 locomotives. One of them could prospectively reach a fleet of 1,000 locomotives by 2030. The rail leasing companies own locomotives for freight services, but also for passenger services. Most of these leasing companies also possess diesel multiple units (DMU) and electric multiple units (EMU) for passenger services.

Nearly two thirds of the locomotives are cross border. It is to be noticed that two leasing companies interviewed have a more important share of diesel locomotives (around 50%) than electric locos. It is also to notice that a significant number of cross border locomotives leased are mainly used on domestic level.

All the leasing companies met propose full-service contracts including maintenance. Some of the leasing companies interviewed have their own maintenance workshops in different parts of Europe and are entities in charge of maintenance (ECM). Leasing companies cooperate for maintenance with other leasing companies using the workshop of one another.

The delivery time for a new built locomotives is approximatively 2.5 to 3.5 years. Some of the leasing companies are buying locomotives on speculative basis and order locomotives without having at this time a secured lessee for those locomotives. This entails positive effects on the rail freight market as it means that it gives the leasing companies the possibility to address in due time the demand of locomotives coming from the operators.

The waiting time for leasing a locomotive to RU's (not newly ordered) is approximately between 3 and 6 months depending of the type of locomotive.

- Level of investments – cost data

The leasing companies met did not provide figures about the investment costs for buying a domestic or a cross border locomotive. However, working group charges received clear and consistent information about price difference between multisystem and domestic locomotives. This price difference is about 10 & 15 % higher for the multisystem and multi traction use. This difference is also reflected in the rentals paid by the operators and the maintenance costs. This difference increases with the number of the systems in the locomotive and can reach up to 35% (locomotive homologated in 5 countries versus a domestic locomotive).

Some leasing companies gave some information about the cost of the heavy maintenance necessary for the locos in distinct time intervals: it amounts to approximately 700,000 €. Each locomotive needs heavy maintenance operations every 5 or 6 years. The cost of heavy maintenance is also indirectly born by the lessee. The heavy maintenance operation leads to a period of unavailability of the locomotive of approximately 2 to 3 months.

Some leasing companies gave cost indications about the ETCS retrofit which can reach 800,000 to 1.000,000 € per locomotive.⁶⁴ Upgrades can cost up to 300,000-350,000 €. In additionally, also software and hardware (e.g. ARBE C4 modem in the case of BI3) might be due for replacement, which easily amount up to 30,000-50,000 € add-on. On top of this, the downtime

⁶⁴ This topic is developed in the paper of WG Access on ETCS.

and the transport costs should be added (transport cost assessed in a range of 5,000-12,000 €).

- Implementation of ETCS.

This aspect will not be developed further in this paper as the WG Access is working on a paper on ETCS. However, AERRL as well as all the leasing companies criticised the way ERTMS is implemented in Europe, the lack of stability of ETCS with continuous upgrades. They are also worried about the new TSIs recently approved, introducing further complexity. Furthermore, the leasing companies criticised that the ERTMS systems can be different across countries, which is a problem for interoperability although even being the key aim of ERTMS. Finally, the leasing companies pointed at the high costs of retrofitting the locomotives with ETCS as well as the necessary updates. All these difficulties will be covered in the paper that the working group access produces on ERTMS.

129 The interviewees also mentioned other relevant technical and administrative barriers that hinder the network access and the provision of international rail freight services. This encompassed the insufficient provision of infrastructure data by IMs about the network conditions, language problems for train drivers, the administrative burden for access beneficiaries due to IMs' rules, the large amount of temporary capacity restrictions on the networks and additional technical requirements related to the digital automated coupling. It was also mentioned that some IMs also impose additional requirement like the Pantograph 1600 mm.

11. Concluding remarks

130 This paper shows the importance of the international rail freight services within the rail freight market. It provides a broad description of the charging systems and conditions across countries. The charging system is generally the same whether the rail freight service is domestic or international, apart from a few exceptions. The paper provides also a good comparison of the charging levels, on average, and for distinct examples of representative freight trains. This shows the differences across countries and also the differences in the same country between different categories of trains. Some of these observations might have been evident to the informed reader, while this paper brings together not only these observations, but also adds an overview about the RNE CIS tool that allows to calculate pre-hand track access charges for international trains runs, as well as on the subsidies paid in the rail freight sector on national level. In nearly all the European countries subsidies are granted for the rail freight services, but without making a distinction between domestic and international services.

131 The present paper further integrates in its assessment the non-charging related barriers for the development of international freight services. Amongst the most important barriers, there are the varying safety systems across countries, different voltages and electricity systems. These technical barriers are at the same time financial or cost related barriers for the development of international freight services. This is highlighted in the last chapter on the European rolling stock market. This chapter provides for a global description, but also for a description specifically related to the fleet of locomotives in Europe per category. Relying on the interviews of some European rail leasing companies

the paper summarises cost indications and observes that the cross-border locomotives are 10 to 15% even up to 35% more expensive than the domestic locomotives.

- 132 The paper shows that reducing barriers for international rail freight services is necessary in order to develop and expand international rail freight services. The introduction of ERTMS, which has the vocation to become the single European signalling system, is a, in general welcomed, initiative to allow for unhindered cross-border rail traffic flows. Its global deployment would facilitate the development of the international rail freight services provided that this system is stable and financially sustainable. However, the attempts and history of the introduction of ERTMS shows that such a project requires considerable efforts to be finalized. Therefore, the ERTMS project seems still far from being completed.
- 133 At European level, concepts for a better and smoother cross-border traffic have been recently adopted. Within the Green Deal, the Smart Sustainable Mobility Strategy has set, among others, the objective of doubling rail freight traffic by 2050. On the legal side, the revised Ten-T regulation integrates the former concept of the rail freight corridors, which shall complete the Trans-European Transport network.⁶⁵ The proposal for an EU regulation on the use of railway infrastructure capacity in the single European railway area⁶⁶ may make the capacity and traffic management more flexible and effective to allow the IM to respond better to the needs of RU and applicants. Aims are “*stable timetables and the option of early ticket-booking for passengers, and flexible train runs adapted to just-in-time supply chains for freight shippers.*” The regulation shall improve the performance of rail, reduce costs for all stakeholders, and shall – with the focus on international rail services – also facilitate the provision of cross-border rail services by introducing better coordination mechanisms.⁶⁷
- 134 Within this up and coming changes of the legal, procedural, digital and political framework the prospects of enhancement for international rail freight services seem promising. The working group charges might, as a later follow up to this paper, again try to evaluate the outcome of these new developments.

⁶⁵ https://transport.ec.europa.eu/transport-themes/mobility-strategy_en; https://transport.ec.europa.eu/transport-themes/infrastructure-and-investment/trans-european-transport-network-ten-t_en.

⁶⁶ See Proposal for a regulation of the European Parliament and of the Council on the use of railway infrastructure capacity in the single European railway area, amending Directive 2012/34/EU and repealing Regulation (EU) No 913/2010COM(2023) 443/2, https://transport.ec.europa.eu/system/files/2023-07/COM_2023_443_0.pdf.

⁶⁷ https://ec.europa.eu/commission/presscorner/detail/en/QANDA_23_3769.

12. Annex I: List of country abbreviations and regulatory bodies

Country	Country	Participating regulatory bodies abbreviation
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
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 Național 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.

13. Annex II: Examples of subsidies systems

135 As a supplement to the analysis, a focus was conducted on the topic of subsidies, addressed to a sample of countries, specifically, **Austria and Germany**.

136 The additional aspects under investigation were reported in response to the following question:

Please describe the type of subsidies aimed at the international rail freight segment, with a distinction between:

- Subsidies for OPEX that are received each year by IMs and are used to afford maintenance and other operating cost, thus reducing the amount of total cost;
- or
- Subsidies for CAPEX that were received back when the assets were built or acquired (for instance, if the network was built with public funds). Dependent on the accounting treatment, these subsidies appear on the balance sheet and are then partially included every year in the P&L account and they lower the depreciation cost proportionally (net depreciation).

It is also requested to describe the type of subsidy that, directly or indirectly, reduce the amount of the TAC paid by the RUs for the international rail freight segment and to reconstruct, if possible, the incidence of each individual subsidy component in relation to the amount of the unit TAC.

137 In Austria, rail freight traffic is supported in two ways:

First, track access charges for providing *manipulated* freight traffic (i.e. single wagon load and combined traffic) have been either waived or reduced since 2020 when Regulation (EU) 2020/1429 (and its consolidated versions, respectively) came into force. In the first semester of 2022, they were completely waived and then reduced by 50 % for the second half of the year. For 2023 and 2024 the track access charges were waived for manipulated freight traffic.

138 Furthermore, there are additional subsidies for providing this service:

- Wagonload freight (à per wagon)
- National/International combined transport (intermodal, container trains) (à per container)
- National/International “Rolling Highway” (à per truck)

139 While single wagon load (“Wagonload”) traffic is a separate market segment, “combined traffic” and “rolling highways” are considered the same market segment.

140 In 2022, the following numbers for subsidies are available. This information does not include any reduction in track access charges:

Table 7 Austrian rail freight subsidies

Rail Freight Subsidies 2022 (Mio. €)	Wagonload	Intermodal	Rolling Highway
Rail Cargo Austria AG (incumbent)	65.0	18.1	12.9
Other RUs (competitors)	0.2	43.6	-
Total	65.2	61.7	12.9

Source Federal Ministry of Austria Climate Action, Environment, Energy, Mobility, Innovation and Technology (Department infrastructure financing). The EUR amounts of the rail freight subsidies represent figures based on knowledge dd. 27.02.2023, as the settlement for 2022 has not been closed due to possible objections of RU.

- 141 In **Germany**, there are three different forms of subsidies that impact rail freight charges:
- Grants to the IM immediately recognized in income (“OpEx subsidies”);
 - Investment grants to the IM (“CapEx subsidies”);
 - Direct subsidies reducing the amount of track access charges to be paid by the RU.
- 142 Since there is no dedicated segment for international freight in Germany, the subsidies for rail freight charges in general apply to international rail freight by the same token.
- 143 **Grants recognized immediately in income** amounted to ~400 million € for the main IM in 2022 (additional 100 million € as shown in figure 19 below are not related to the minimum access package (MAP)). These grants are recognized immediately in the profit and loss statement and reduced the cost of the MAP in 2022. Theoretically, the revenue from track access charges is reduced by this amount in 2022. However, it is not possible to determine the exact impact on the track access charges for international freight services since the cost of the MAP only constitutes the revenue cap, i.e. the maximum of revenues resulting from the track access charges that the IM seeks approval for and forecasted train path kilometres. On the one hand, the IM has in the past sought approval for track access charges resulting in a revenue below the cost of the MAP. On the other hand, since in Germany Ramsey-Boiteux is applied to determine mark-ups for the different segments, a higher amount to be distributed as mark-ups will impact the segments by a different magnitude depending on their end-customer elasticity.
- 144 **Investment grants** amounted to ~7.2 bn. € in 2022. These subsidies reduce the cost of the MAP over the years of the useful life of the subsidized asset and thus – indirectly - the track access charges. The main IM in Germany applies the net value method for recognizing investment grants: Only the amount paid by the IM (net of subsidies) is recognized on the balance sheet and depreciated over the useful life of the asset. Thus, it is not possible to identify by which amount the cost of the MAP is reduced due to investment grants in a certain year. Additionally, the limitations laid out in the previous section apply to investment grants as well.

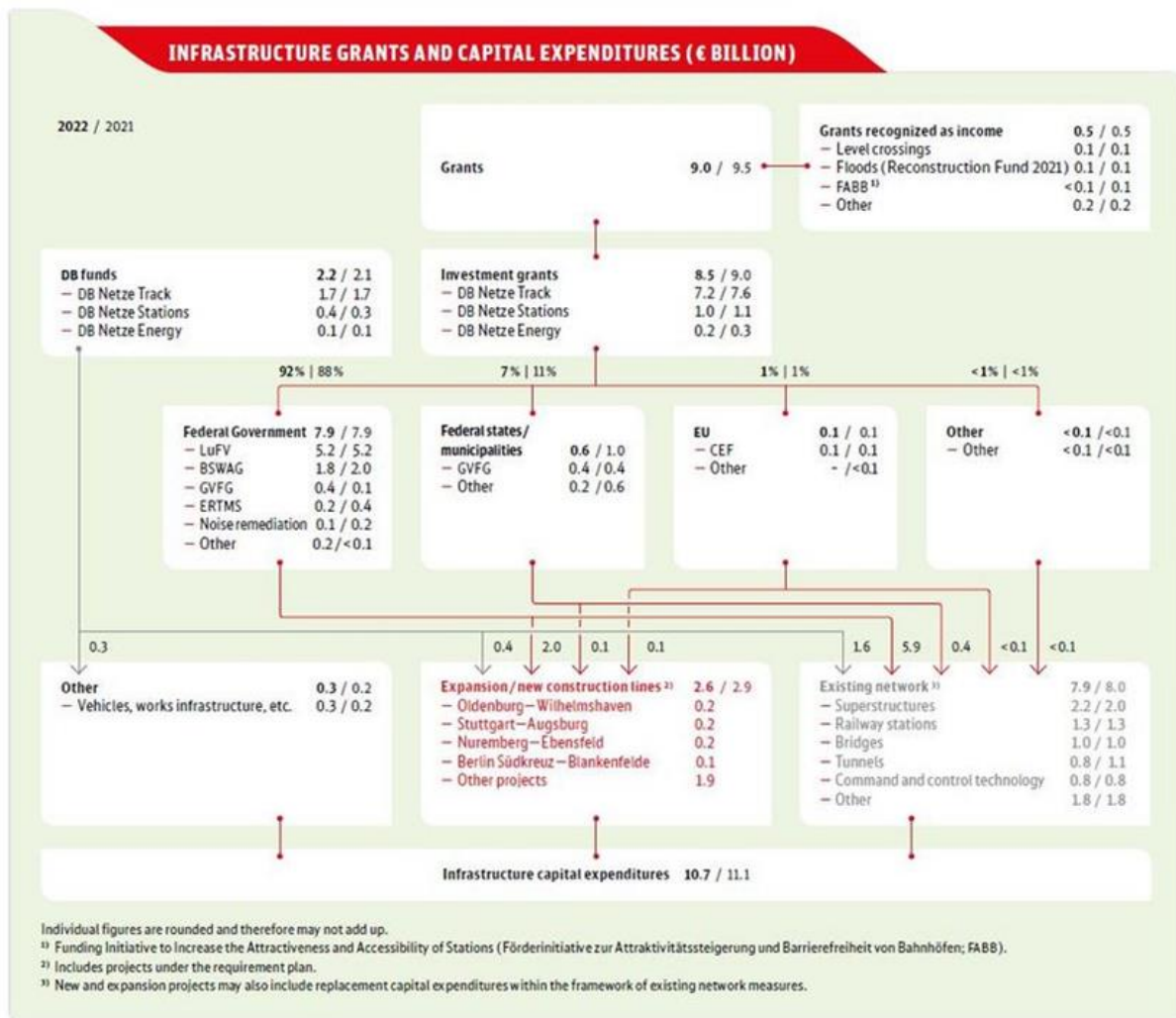
- 145 In Germany, there are also additional **direct grants** to reduce the track access charges for rail freight services in order to increase their competitiveness versus other modes of transportation for goods. The subsidies are disbursed to the IM and deducted from the track access charges to be paid by the RU – the RU is thus only paying the amount net of subsidies.
- 146 The percentage reduction of the track access charges depends on the (absolute) amount provided by the federal government for each year as well as the amount of rail freight traffic in that specific year. In 2022, the subsidies amounted to approx. 45% of the TAC, whereas in 2020 and 2021 additional subsidies to alleviate the economic effects of the COVID-19 pandemic increased the amount of direct subsidies to approx. 88-99% of the track access charges.
- 147 The track access charges as listed in the questionnaire are gross values before deduction of the direct subsidies (but obviously including investment grants and grants recognized in income).

Table 8 Average freight charges in Germany for 2022

Type of service	Specific	Engine	Speed	Weight	Charge/ trkm	DC based charge/ trkm	Mark-up charge/ trkm
Freight	-	Electric	-	1000t	3.07	1.496	1.574
Freight	-	Diesel	-	1000t	3.07	1.496	1.574
Freight	-	Electric	-	3000t	4.37	2.579	1.791
Freight	-	Diesel	-	3000t	4.37	2.579	1.791

Source: Network statement 2022 (https://www.bundesnetzagentur.de/DE/Beschlusskammern/1_GZ/BK10-GZ/2021/2021_0100bis0199/BK10-21-0164/BK10-21-0164_Z_Anhang_2_Download.pdf)

Figure 19 Illustration of subsidies received by DB Netz AG (main IM in Germany)



Source: <https://ir.deutschebahn.com/en/db-group/capital-expenditures/>

12. Annex III: Examples of calculation of track access charges

148 In **Romania**, the methodology for calculating track access charges is based on the following tariff elements:

- the distance covered by the train calculated between the axis of the station of origin and the axis of the destination station;
- the gross tonnage of the train;
- type of traffic: freight or passengers;
- the traffic route;
- the class of the section for calculation of track access charges and its endowment with electrification systems to ensure the traction power.

149 In **Italy**, the access charge is calculated as the sum of the following two components A (direct costs) and B (mark-ups): ACCESS CHARGE = A+B

- component A is related to the wear and tear of the infrastructure (tracks and overhead contact lines); component B is related to the market segments' ability to pay.
- Component A of the access charge comprises the three sub-components A1, A2, A3: A = A1weight + A2speed + A3contact line sub-component A1 relates the wear and tear of the track to the weight classes of the train;
- sub-component A2 relates the wear and tear of the track to the operating speed classes of the train;
- sub-component A3 is related to the wear and tear of the overhead contact line.

150 Each sub component may be calculated as the result of a unit fee (by class) times the number of kilometres travelled. Therefore, the value of A is given by the following formula: $A = (TA1 + TA2 + TA3) \times km$.

151 Component B of the access charge is related to the market segments' ability to pay. The value of B is the result of the unit fee (by market segment) times the distance travelled (in kilometres), according to the following formula: $B = TB \times km$. The market segments are defined downstream of a classification by first and second level binomials.

152 Regarding the **fixed link between UK and France**, the charging regime of Eurotunnel in its Network Statement of 2024 comprises 4 separate offers for freight trains. It is based on a combination of two elements:

153 First, a reservation charge is paid by any RU, which has booked a Eurotunnel train path or train paths and varies according to the scheduled time of use. The different times of use are off-peak period, intermediate period, peak period or maintenance period.

- Offer 1 – **Reserved Weekly Train**: One weekly (or daily) single crossing in the annual working timetable, in the same days on the same train paths reserved for all weeks in the period of the working timetable (or all remaining weeks if reserved during the working timetable) for the same service (origin/destination).

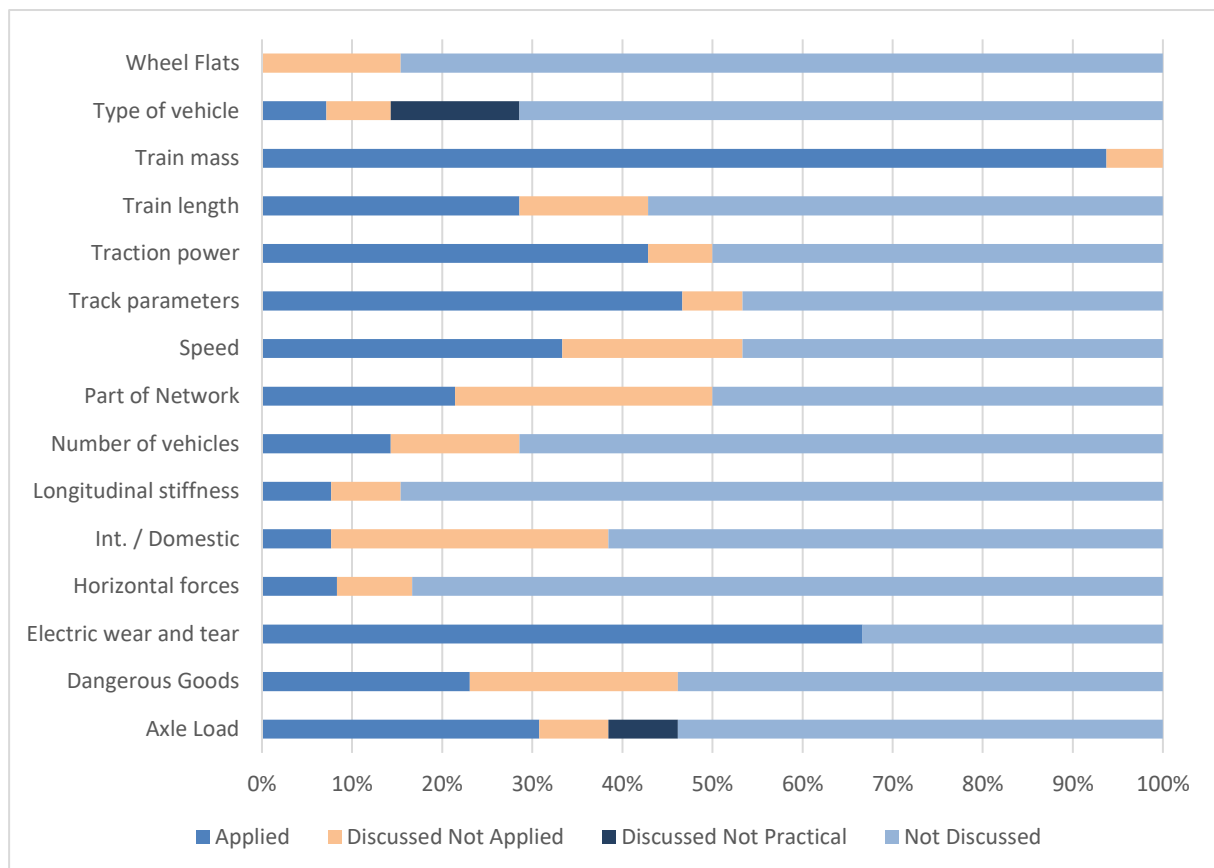
- Offer 2 – **Reserved Individual Train**: One or more single crossings in one or more individual single train paths reserved in the annual working timetable, or reserved during the working timetable. –
- Offer 3 – **Unreserved Additional Train**: One or more single crossings unreserved in the annual working timetable, and without 24h advance planning at the latest, or planned less than a week in advance following an ad hoc request.
- Offer 4 – **Light Engine Movement**: One or more single crossings by locomotives without wagons unreserved in the annual working timetable, scheduled no sooner than one week in advance, and operated on stand-by.

154 Second, the access charge is paid by every RU for actual operation of its trains on Eurotunnel's common section and varies according to the scheduled and actual time of use. Administration costs will be charged under offers 2, 3 and 4 for requests for non-standard paths (special paths at lower speeds, or with special operating requirements, etc.) to cover the requirements for planning, safety or technical studies, and additional operational and management resources. Likewise, the access fee will be supplemented in certain conditions in the event of breakdown of a rail freight train in the Channel Fixed Link involving a prolonged stationary period, in particular for recurring failures.

13. Annex IV: Evaluation of ‘Quantitative Answers – Heat Map’

155 As part of the questionnaire, IRG members were asked to indicate whether specific components/parameters are part of their track access charging scheme. The following Figure 20 summarizes the answers and provides a brief overview across the responding countries on whether the components are applied in the track access charging scheme or were at least discussed during the design of the scheme.

Figure 20 Overview TAC components



156 For parameter '**Axle Load**' a total of 13 answers were received. Answers show that in 31 percent of responding countries the parameter 'Axle Load' is part of/applied in their corresponding track access charging scheme. Around 8 percent responded that the issue has been discussed and/or not applied while 8 percent chose the answer 'discussed and/or not practical'. For 54 percent of all answers received this aspect was/is 'not discussed' (so far).

157 A total of 13 answers were received on whether the parameter '**Dangerous Goods**' is part of the corresponding track access charging scheme. Answers show that in 23 percent of responding countries the parameter 'Dangerous Goods' is applied accordingly. Around 23 percent responded that the issue has been discussed and/or not applied while none of the respondents chose the answer 'discussed and/or not practical'. For 54 percent of all answers received this aspect was/is 'not discussed' (so far).

- 158 For parameter '**Electric wear and tear**' a total of 15 answers were received. Answers show that in 67 percent of responding countries the parameter 'Electric wear and tear' is part of/applied in their corresponding track access charging scheme. For 33 percent of all answers received this aspect was/is 'not discussed' (so far).
- 159 A total of 12 answers were received on whether the parameter '**Horizontal forces**' is part of the corresponding track access charging scheme. Answers show that in 8 percent of responding countries the parameter 'Horizontal forces' is applied accordingly. Around 8 percent responded that the issue has been discussed and/but not applied while no respondent chose the answer 'discussed and/but not practical'. For 83 percent of all answers received this aspect was/is 'not discussed' (so far).
- 160 For parameter '**Int. / Domestic**' a total of 13 answers were received. Answers show that in 8 percent of responding countries the parameter 'Int. / Domestic' is part of/applied in their corresponding track access charging scheme. Around 31 percent responded that the issue has been discussed and/but not applied. For 62 percent of all answers received this aspect was/is 'not discussed' (so far).
- 161 A total of 13 answers were received on whether the parameter '**Longitudinal stiffness**' is part of the corresponding track access charging scheme. Answers show that in 8 percent of responding countries the parameter 'Longitudinal stiffness' is applied accordingly. Around 8 percent responded that the issue has been discussed and/but not applied while 0 percent chose the answer 'discussed and/but not practical'. For 85 percent of all answers received this aspect was/is 'not discussed' (so far).
- 162 For parameter '**Number of vehicles**' a total of 14 answers were received. Answers show that in 14 percent of responding countries the parameter 'Number of vehicles' is part of/applied in their corresponding track access charging scheme. Around 14 percent responded that the issue has been discussed and/but not applied while none of the respondents chose the answer 'discussed and/but not practical'. For 71 percent of all answers received this aspect was/is 'not discussed' (so far).
- 163 A total of 14 answers were received on whether the parameter '**Part of Network**' is part of the corresponding track access charging scheme. Answers show that in 21 percent of responding countries the parameter 'Part of Network' is applied accordingly. Around 29 percent responded that the issue has been discussed and/but not applied while no country chose the answer 'discussed and/but not practical'. For 50 percent of all answers received this aspect was/is 'not discussed' (so far).
- 164 For parameter '**Speed**' a total of 15 answers were received. Answers show that in 33 percent of responding countries the parameter 'Speed' is part of/applied in their corresponding track access charging scheme. Around 20 percent responded that the issue has been discussed and/but not applied while no respondent chose the answer 'discussed and/but not practical'. For 47 percent of all answers received this aspect was/is 'not discussed' (so far).
- 165 A total of 15 answers were received on whether the parameter '**Track parameters**' is part of the corresponding track access charging scheme. Answers show that in 47 percent of responding countries the parameter 'Track parameters' is applied accordingly. Around 7 percent responded that the issue has been discussed and/but not applied while no country chose the answer 'discussed and/but not practical'. For 47 percent of all answers received this aspect was/is 'not discussed' (so far).

- 166 For parameter '**Traction power**' a total of 14 answers were received. Answers show that in 43 percent of responding countries the parameter 'Traction power' is part of/applied in their corresponding track access charging scheme. Around 7 percent responded that the issue has been discussed and/but not applied while no country chose the answer 'discussed and/but not practical'. For 50 percent of all answers received this aspect was/is 'not discussed' (so far).
- 167 A total of 14 answers were received on whether the parameter '**Train length**' is part of the corresponding track access charging scheme. Answers show that in 29 percent of responding countries the parameter 'Train length' is applied accordingly. Around 14 percent responded that the issue has been discussed and/but not applied while no respondent chose the answer 'discussed and/but not practical'. For 57 percent of all answers received this aspect was/is 'not discussed' (so far).
- 168 For parameter '**Train mass**' a total of 16 answers were received. Answers show that in 94 percent of responding countries the parameter 'Train mass' is part of/applied in their corresponding track access charging scheme. Around 6 percent responded that the issue has been discussed and/but not applied while none of the countries chose the answers 'discussed and/but not practical' or 'not discussed' (so far).
- 169 A total of 14 answers were received on whether the parameter '**Type of vehicle**' is part of the corresponding track access charging scheme. Answers show that in 7 percent of responding countries the parameter 'Type of vehicle' is applied accordingly. Around 7 percent responded that the issue has been discussed and/but not applied while 14 percent chose the answer 'discussed and/but not practical'. For 71 percent of all answers received this aspect was/is 'not discussed' (so far).
- 170 For parameter '**Wheel Flats**' a total of 13 answers were received. Answers show that in 0 percent of responding countries the parameter 'Wheel Flats' is part of/applied in their corresponding track access charging scheme. Around 15 percent responded that the issue has been discussed and/but not applied while no country chose the answer 'discussed and/but not practical'. For 85 percent of all answers received this aspect was/is 'not discussed' (so far).