

UPDATED REVIEW OF CHARGING PRACTICES FOR THE MINIMUM ACCESS PACKAGE IN EUROPE

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Introductory remarks

*This updated review on charging practices for the minimum access package covers the following countries, members of IRG-Rail: **Austria, Croatia, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Luxemburg, Netherlands, Norway, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.***

*The IRG-Rail charging working group intends to review this document when appropriate as further information becomes available from other members or other regulatory bodies. In addition the working group would like to underline that this document is an **interpretation of the common charging principles as they stand rather than stating what the charging principles 'should' consist of.** In other words, the document only provides a description on the charging systems designed by national infrastructure managers.*

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1. General objectives of the document

The Directive 2012/34/EU was due to be implemented by the Member States before June 16th, 2015. As many Member States have implemented it only recently or have not implemented it yet,

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charging principles for the minimum access package are still based in some countries on the principles outlined in the former directive (Directive 2001/14/EC). It is thus possible that some charging schemes will evolve in the coming months as a consequence of the Directive's transposition.

The 2012/34/EU Directive is considered to be the legal basis for establishing the principles governing rail charging systems in Europe. This Directive requires Member States to establish charging frameworks that meet the management independence initially laid down in Directive 91/440/EC, and sets out in particular the principles of accounting, legal organisation and decision making separation between railway companies and the state, and between infrastructure managers (IMs) and railway undertakings. A regulatory body, legally distinct and independent from any other public and private entity and independent from the IM, has to be implemented in order to guarantee fairness and transparency.

This framework is crucial for a successful functioning of the European railway market. As a result, Member States are now moving towards more transparent capacity allocation and charging systems.

The charging system can provide several desirable outcomes. It obviously provides a mechanism for the IM to recover costs. However it can also be used to incentivise the optimal use and provision of the infrastructure. For example, charges based on cost provide signals to operators and funders to only use the infrastructure where the benefits of use exceed this cost. Furthermore, it can incentivise railway undertakings to find ways to reduce the costs they place on the network by, for example, investing in less damaging trains.

The purpose of this document is to present an overview of the charging approaches for the minimum access package in the Member States which are part of the IRG-Rail charging working group.

IRG-Rail intends to expand this overview report and would like to invite other IRG-Rail members and European rail regulatory bodies to participate and submit information on their charging systems when available. **The present version is the second update of the overview published in October 2012. The second version provided an addendum (section 3) that explains the regulatory bodies' roles in charging issues. The third version includes descriptions on the role of regulatory bodies in respect of investments (section 3.4) and overviews on the impact of public compensation on charges (section 3.4).** The IRG-Rail charging working group will update the report as necessary.

The review of charging systems should allow the IRG-Rail charging working group to:

1. Obtain a common understanding of charging principles in rail in Europe;
2. Explore a common framework for the review of charging principles given by Directive 2012/34/EU;
3. Refine and/or expand activities considered in the working programme of the working group.

2. Charging characteristics: review of charging principles in IRG-Rail Member States

According to Directive 2012/34/EU, Annex II-1, the charges specified in the network statements should cover the items included in the minimum access package which are:

- Handling of requests for infrastructure capacity;
- Right to utilise capacity which is granted;
- Use of running track points and junctions;
- Train control including signalling regulation, dispatching and the communication and provision of information;
- Use of electrical supply equipment for traction current, where available;
- All other information required to implement or operate the service for which capacity has been granted.

The main charging principles laid down in Directive 2012/34/EU provide that:

- Charges for the use of rail infrastructure must be paid to the IM and be used to fund its activities (article 31(1) of Directive 2012/34/EU);
- Charges must be set at the “*cost that is directly incurred as a result of operating the train service*” (article 31(3) of Directive 2012/34/EU). This principle applies to the minimum access package (the methodology for the calculation of the cost that is directly incurred is given by the European Commission Regulation 2015/909 of June 2015. In November 2016, IRG-Rail issued a document presenting engineering and econometric methodologies which may be used to calculate direct costs¹);
- There are exceptions to these charging principles :
 - In order to obtain full recovery of costs, IMs are allowed to levy a mark-up if the market can bear it and provided that market segments have been defined (article 32.1 of Directive 2012/34/EU). Under this exception, the level of charges must not exclude the use of infrastructure by market segments which can pay at least the cost that is directly incurred as a result of operating a railway service, plus a rate of return that the market can bear;
 - Besides, for specific future investment projects, or specific investment projects that have been completed after 1988, the IM may set or continue to set higher charges on the basis of the long-term costs of such projects if they increase efficiency or cost-effectiveness or both and could not otherwise be or have been undertaken (article 32(3) of Directive 2012/34/EU).
- Charges can also be levied to reflect scarcity of capacity of an identifiable segment of the infrastructure during periods of congestion (article 31(4) of Directive 2012/34/EU) or take account of environmental effects (article 31(5) of Directive 2012/34/EU);
- Infrastructure charging schemes must also encourage railway undertakings and the IM to minimise disruption and improve the performance of the railway network through a performance scheme (article 35 of directive 2012/34/EU).

¹ IRG-Rail, *An introduction to the calculation of direct costs in respect of implementing regulation 2015/909*, November 2016.

The table below (compiled by the working group) provides an overview of application of charges for the minimum access package in IRG-Rail members. The table is based on the assessment of charging practices in countries detailed in annex (pp. 29-58)². It does not represent the full regulatory framework in each country as a regulatory framework may allow different solutions/options that the IM does not necessarily adopt. It provides information on the following charging characteristics:

- **Charge(s) reflecting direct costs according article 31(3) of Directive 2012/34/EU :** *“[w]ithout prejudice to paragraph 4 or 5 of this Article or to Article 32, the charges for the minimum access package and for access to infrastructure connecting service facilities shall be set at the cost that is directly incurred as a result of operating the train service”;*
- **Mark-ups and market segmentation according article 32(1) of Directive 2012/34/EU :** *“[i]n order to obtain full recovery of the costs incurred by the infrastructure manager a Member State may, if the market can bear this, levy mark-ups on the basis of efficient, transparent and non-discriminatory principles, while guaranteeing optimal competitiveness of rail market segments. The charging system shall respect the productivity increases achieved by railway undertakings”;*
- **Annual prices :** the table indicates whether charges are set every year or not ;
- **Charge(s) under article 32(3) of Directive 2012/34/EU (long term costs):** *“[f]or specific future investment projects, or specific investment projects that have been completed after 1988, the infrastructure manager may set or continue to set higher charges on the basis of the long-term costs of such projects if they increase efficiency or cost-effectiveness or both and could not otherwise be or have been undertaken. Such a charging arrangement may also incorporate agreements on the sharing of the risk associated with new investments”;*
- **Discounts under article 33(3) of Directive 2012/34/EU :** *“[i]nfrastructure managers may introduce schemes available to all users of the infrastructure, for specified traffic flows, granting time-limited discounts to encourage the development of new rail services, or discounts encouraging the use of considerably underutilised lines”;*
- **Charges for the impact of public service operation contract under article 12 of directive 2012/34/EU :** *“Member States may, under the conditions laid down in this Article, authorise the authority responsible for rail passenger transport to impose a levy on railway undertakings providing passenger services for the operation of routes which fall within the jurisdiction of that authority and which are operated between two stations in that Member State”;*
- **Incentives under articles 30.1 of Directive 2012/34/EU :** *“[i]nfrastructure managers shall, with due regard to safety and to maintaining and improving the quality of the*

² **Note:** this table only refers to the mainline network of the incumbent. In some countries, this excludes high-speed lines where high speed trains (generally speed ≥ 200 km/h) are the only ones allowed. Other countries have a mixed usage of their whole network.

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infrastructure service, be given incentives to reduce the costs of providing infrastructure and the level of access charges”.

	Charge(s) reflecting direct costs (article 31.3 of directive 2012/34/EU)	Charge(s) under article 32.3 of directive 2012/34/EU (long term costs)	Annual prices?	Market segments? (article 32.1 of directive 2012/34/EU)	Mark-ups "if the market can bear this" (article 32.1 of directive 2012/34/EU)	Discounts (article 33.3 of directive 2012/34/EU)	Charges for the impact of PSO contracts (article 12 of directive 2012/34/EU)	Incentives under article 30.1 of directive 2012/34/EU
Austria	✓	✗	✓	✓	✗	n/a	n/a	n/a
Croatia	✓	✗	✗	✗	✗	✗	✗	✗
Denmark	(✓) <i>(The charging scheme is currently based on direct costs but the current level of charges does not reflect direct cost. It is foreseen to be based in 2016)</i>	(✗) <i>(The train kilometre charge is as of 2016 foreseen to be based on direct cost through a 12-year period : 2009-2020)</i>	✓	✗	✗	✗	✗	✓
Finland	✓	✓ <i>(One track section)</i>	✗	✗	✗	✗	✗	✗
France	✓	✗	✓	✓	✓	✗	✗	✗
	Charge(s) reflecting direct costs (article 31.3 of	Charge(s) under article 32.3 of directive 2012/34/EU	Annual prices?	Market segments? (article 32.1 of directive	Mark-ups "if the market can bear this" (article 32.1 of directive	Discounts (article 33.3 of directive 2012/34/EU)	Charges for the impact of PSO contracts (article 12 of	Incentives under article 30.1 of directive 2012/34/EU

	directive 2012/34/EU)	(long term costs)		2012/34/EU)	2012/34/EU)		directive 2012/34/EU)	
Germany	✓ <i>The German law foresees that on basis of the MC a surcharge for cost recovery is levied (Full costs can partially be covered by subsidies).</i>	✗ <i>(but legally possible for specific investments)</i>	✓	Currently under examination by BNetzA. Introduction in 2018	Currently under examination by the BNetzA. Introduction in 2018	✓	✗	Currently under examination within the implementation process
Greece	<i>The Greek IM gradually applies the implementing regulation</i>	✗	✓	✗	✗	✗	✗	✗
Hungary	✓	✗	✓	✓	✓	✓	✓	n/a
Italy	✓	✗	✓	✓	✓	✓	✗	✓
Latvia	✓	✗	✓ <i>(based on a current year cost analysis and a forecast of future costs)</i>	✓	✗	n/a	n/a	n/a
	Charge(s) reflecting direct costs (article 31.3 of directive	Charge(s) under article 32.3 of directive 2012/34/EU (long term costs)	Annual prices?	Market segments? (article 32.1 of directive 2012/34/EU)	Mark-ups "if the market can bear this" (article 32.1 of directive 2012/34/EU)	Discounts (article 33.3 of directive 2012/34/EU)	Charges for the impact of PSO contracts (article 12 of directive	Incentives under article 30.1 of directive 2012/34/EU)

	2012/34/EU)						2012/34/EU)	
Luxemburg	✓	✗	✓	✗	✗	n/a	n/a	n/a
Netherlands	✓	✗	✓	✓	✓ <i>Only on lines designated by Transport Ministry (currently: high speed -only)</i>	✗	✗	✗
Poland	✓	✓	✓	✓ <i>Currently under examination.</i>	✗ <i>Currently under examination.</i>	✓	✗	✓
Romania	✓	✓	✓	✓	✓	✓	✓ <i>Currently under examination within the implementation process</i>	✓
Slovakia	✓	✗	✗	✗	✗	✗	✗	✗
Slovenia	✓	✓	✗	✗	✗	✗	✓	✓
Spain³	✗	✗	✓	✓	✗	n/a	n/a	n/a
Sweden	✓	✓	✓	✗	✓	✗	✗	✗
	Charge(s) reflecting direct costs (article 31.3 of directive 2012/34/EU)	Charge(s) under article 32.3 of directive 2012/34/EU (long term costs)	Annual prices?	Market segments? (article 32.1 of directive 2012/34/EU)	Mark-ups "if the market can bear this" (article 32.1 of directive 2012/34/EU)	Discounts (article 33.3 of directive 2012/34/EU)	Charges for the impact of PSO contracts (article 12 of directive 2012/34/EU)	Incentives under article 30.1 of directive 2012/34/EU

³ Current access charges design is transitory as a new railway Law has been promulgated in September 2015. This law transposes the Recast Directive and foresees a direct cost approach.

Switzerland	✓	✗	✓	✓	✓	✓	✗	✗
UK	✓	✗ <i>(Although High Speed 1 has this and there may be more examples in the future)</i>	✗ <i>Periodic review, 5 years</i>	✓	✓	✗	✗	✗

Findings of this charging review show that:

- In most countries, the charging models are based (at least partly) on the principle of **marginal cost pricing**, although the methods by which marginal costs are estimated and the charges' design vary between countries. In Italy, a new system has been implemented following the new regulatory framework issued by ART, last November 2015, coherent with the principles set in the Recast. Under the new setting access charges sum up different components: direct costs, mark-ups and other components (incentives for ETCS, surcharges for scarcity, environmental effects, etc.). There, direct costs are estimated on the basis of three factors: train overall mass, path traffic speed and contact wire (on the basis of type of the rolling stock)⁴. The new system will be applied from January 2018;
- Most countries have a **multi-part charging structure**;
- There is a trend to take into account external effects. **Sweden**, for instance, incorporates an emission charge levied on combustion engine-driven vehicles into its charging regime. Similar approaches are considered in other countries such as **Switzerland**, which expects to adopt a new rail charging structure for 2017, and **Germany** that introduced a noise differentiated charge for freight trains in June 2013. In 2015 about 15 per cent of railway undertakings of the rail freight segment used low-noise trains. However only 5 per cent of total train-path km were travelled by those low-noise trains.

In contrast to these areas where a broad commonality of approaches exists, there are several important differences in the approach when regulating IMs in IRG-Rail Member states. These include:

- **Mark-ups** and **market segmentation** are not applied in all countries and, when applied, it appears to differ across countries;
- There are also key differences in the **periodicity of access charges reviews**. In the UK or in Hungary, charges are reviewed every five years, whereas in most other countries, for example in France and Poland, this is done on an annual basis. In Italy, while the regulatory period lasts 5 years, access charges are updated every year (adjusting, as an example, for inflation and traffic forecasts).

Depending on the number of IMs in each country, **charging practices may also differ within an individual IRG-Rail Member state**. Our analysis has only focused on general trends for the main line network within each Member state and does not address charging systems of local passenger or freight networks or separate high speed lines.

In addition to the access charge reflecting direct costs incurred for the use of the network targeted by article 31(3) of Directive 2012/34/EU, most national charging systems consider other charges. In order to avoid confusion, common understandings of these additional charges are detailed below:

⁴ See ART Decision 96/2015, available at the link: http://www.autorita-trasporti.it/wp-content/uploads/2015/12/Determination-of-charges-for-access-and-use-of-railway-infrastructure_ARTs-Regulatory-measures1.pdf

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- **Congestion and scarcity charges⁵**

The issue of scarcity and congestion is addressed in Article 31(4) of Directive 2012/34/EU. It states that *“the infrastructure charge may include a charge which reflects the scarcity of capacity of the identifiable section of the infrastructure during periods of congestion.”*

A table setting out whether national infrastructure managers include scarcity charge within their pricing schemes is included below.

- **Environmental charges**

Directive 2012/34/EU states, under Article 31(5), that *“[t]he infrastructure charge may be modified to take account of the cost of the environmental effects caused by the operation of the train.”* It as well stresses that *“[s]uch a modification shall be differentiated according to the magnitude of the effect caused.”*

Some countries have decided to put more emphasis on environmental externalities and promote clean transport modes like rail. Germany uses an integrated system of bonus and malus for freight traffic: a malus for all not retrofitted wagons running on the network and a bonus for those wagons using retrofitted brake blocks. In Italy, following the Decision 96/2015, the IM is allowed to include in the access charges a component that boosts the reduction of noise effects⁶. Environmental charges are used to create a level-playing field across all modes based on impacts on the environment. IRG-Rail considers that all modes should be charged in a way that prevents one mode from being at a disadvantage compared to others.

- **Performance:**

Directive 2012/34/EU states, under article 35(1), that *“[i]nfrastructure charging schemes shall encourage railway undertakings and the infrastructure manager to minimise disruption and improve the performance of the railway network through a performance scheme. This scheme may include penalties for actions which disrupt the operation of the network, compensation for undertakings which suffer from disruption and bonuses that reward better-than-planned performance”.*

- **Reservation charge :**

Directive 2012/34/EU states, under article 36 that *“[i]nfrastructure managers may levy an appropriate charge for capacity that is allocated but not used. That non-usage charge shall provide incentives for efficient use of capacity. The levy of such a charge on applicants that were allocated a train path shall be mandatory in the event of their regular failure to use allocated paths or part*

⁵ It is worth noting that, in November 2014, IRG-Rail has adopted a position paper providing a common initial approach to capacity charging.

⁶ The IM may use the bonus/malus formula and the modalities provided for by Commission Implementing Regulation (EU) 2015/429.

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of them. For the imposition of this charge, the infrastructure managers shall publish in their network statement the criteria to determine such failure to use. The regulatory body referred to in Article 55 shall control such criteria in accordance with Article 56. Payments for this charge shall be made by either the applicant or the railway undertaking appointed in accordance with Article 41(1). The infrastructure manager shall always be able to inform any interested party of the infrastructure capacity which has already been allocated to user railway undertakings.”

In some countries this charge is introduced as a cancellation charge that applies, when one or several train running days on a train path or part of a train path are withdrawn by the ordering railway undertaking.

A summary of how these various charges are applied in IRG-Rail members is given in the table below.

Country	Congestion / Scarcity	Performance	Environmental	Reservation or Cancellation charge
Austria	✓	✓	✗	✓ <i>(Only for passenger services)</i>
Croatia	✗	✓	✗	✓ <i>(Late cancellation or non-use fees. Depends on cancellation time)</i>
Denmark	✗ <i>(According to Danish Railway Law, congestion is regulated by capacity allocation schemes of the IM. Current charging scheme contains a capacity charge. It is foreseen that the charge will not be levied anymore after 2016)</i>	✓	✓	✓
Finland	✗	✓	✗	✗
France	✓	✓	✗	✓ <i>(Charge combined with mark-ups levied under article 32.1 of Directive 2012/34/EU)</i>
Germany	✗	✓	✓ <i>(Noise differentiated track access charges for freight trains)</i>	✓ <i>(Cancellation fee referring to the withdrawal of one or several train running days on a train path or part of a train path)</i>
Greece	✗	✗	✗	✗
Hungary	✗	✓	✗	✓
Italy	✓	✓	✓	✓
Latvia	✗	✗	✗	✗
Luxemburg	✓	✓	✗	✓ <i>(A reservation fee is invoiced to avoid abusive reservations)</i>
Netherlands	✓	✓ <i>(Noise-related and path quality related (both optional))</i>	✗ <i>(Noise only)</i>	✓ <i>(Late cancellation or non-use fees. Depends on cancellation time)</i>
Country	Congestion / Scarcity	Performance	Environmental	Reservation or Cancellation charge

	✓ <i>(Implemented but not used yet)</i>	✗ <i>(Currently under implementation)</i>	✓ <i>(Implemented but not used yet)</i>	✓
Poland	✓ <i>(Implemented but not used yet)</i>	✗ <i>(Currently under implementation)</i>	✓ <i>(Implemented but not used yet)</i>	✓
Romania	✓	✓	✓	✓
Slovakia	✗	✗	✗	✗
Slovenia	✓	✗	✗	✓ <i>(Late cancellation or non-use fees. Depends on cancellation time)</i>
Spain⁷	✗	✗	✗	✗
Sweden	✓	✓ <i>(Quality charge)</i>	✓	✓
Switzerland	✓	✗	✓	✓
UK	✗	✓	✗	✗ <i>(There is only a reservation charge on the High Speed 1)</i>

The review of charging approaches highlights that Member States apply different pricing components to address additional charging possibilities. This may be a consequence of different political preferences, structural differences, different traffic patterns as well as different approaches to regulating the broader transportation sector. It is worth noting that the environmental charge is only applied in few countries (e.g. Germany, Poland, and Sweden)

The table below provides information on the main charging units used by Member States. It highlights that the train.km is the most commonly used charging unit (few Members States currently use the tonne.km).

⁷ Current access charges design is transitory as a new Railway Law has been promulgated in September 2015. This law transposes the Recast Directive and foresees a direct cost approach.

Country	Main charging units
Austria	Train.km and gross-tonne.km
Croatia	Train.km
Denmark	Train.km and DKK/train
Finland	Gross-tonne.km
France	Path.km, train.km and €/year
Germany	Path.km
Greece	Train.km
Hungary	Train.km and number of paths
Italy	Train.km
Latvia	Train.km
Luxemburg	Path.km
Netherlands	Train.km
Poland	Train.km
Romania	Train.km and gross tonne.km
Slovakia	Train.km and gross tonne.km
Slovenia	Train.km
Spain	Path.km, seats.train.km and train.km
Sweden	Gross tonne.km, train.km and €/minute
Switzerland	CHF/year, train.km, gross tonne.km, powered axle.km, % of traffic revenues
UK	Thousand gross tonne vehicle.mile, vehicle.mile, train.mile and billing period

3. Roles of regulatory bodies in charging issues

The IRG-Rail Charging working group is currently working on reviewing and understanding the role of regulatory bodies in the context of charging review in the different Member States. Most regulatory bodies are involved in the review of access charging. However, their roles and degree of involvement appear to diverge significantly from one country to another. In some countries like Italy, the Regulatory body can impose specific criteria and principles that must be followed by the IM in the determination of the access charges. The “prescriptions” may include costing and pricing rules as well as specific economic values (as for example in the application of the CAPM/WACC formula).

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In this context, the IRG-Rail Charging working group has produced a questionnaire to map the roles of regulatory body in respect of charging. The questionnaire aims at establishing what the general approaches to charging in various Member States are and exploring in further details some aspects of charging issues.

The following paragraphs present a summary of the main results of the questionnaire, organized by section, *i.e.* (1) general regulatory issues, (2) charging review, (3) charging principles and cost model, (4) investment and subsidies, (5) earnings and cost of capital, (6) efficiency, (7) market segments, (8) performance regime / performance scheme, (9) traffic forecasts and (10) complaints.

3.1 General regulatory issues

- *Scope of regulatory bodies' mission*

Although most railway regulatory bodies (*e.g.* the Danish, Norwegian, Finnish, Polish and Swiss regulatory bodies) are only responsible for the regulation of the railway market, some members have a wider spectrum of responsibilities in the transport sector and regulate airports (or even the whole aviation sector), or all the liberalized public transport markets. For example, the Belgium regulatory body also regulates Brussels Airport Operations. In Italy, the *Autorità di Regolazione dei Trasporti* (ART), beside railways, is also in charge of airports, highways, local public transport (buses and, under some respects, taxi) and ports. The Slovakian Transport Authority is also responsible for air and water transports. The Swedish Transport Agency is the regulatory body for rail, roads, maritime routes, and the whole aviation sector. The French regulatory body is in charge of the rail, road and coach sector regulation, while the UK regulator has a monitoring function for roads too.

A few regulatory bodies are also responsible for the regulation of other network industries such as telecommunications and postal services as in Slovenia, the Netherlands or Germany. For the latter, the energy sector (electricity and gas) and energy grid expansion are also part of the regulatory body's competencies. The Spanish Regulatory Body is also in charge of more general competition-related issues.

Within the railway sector, IRG-Rail members can also be responsible for issues other than economic regulation such as licensing in Greece, passenger complaints in Austria, Slovenia and Italy or safety as in Slovakia. Both in the UK and Poland, the regulatory body is responsible for economic rail market regulation, licensing, safety regulation and passenger rights. The Swedish Transport Agency is also the National Safety Agency (NSA) in charge of licensing and safety regulation. In Hungary, the regulatory body is also in charge for licensing and passengers' rights, and operates within the Hungarian Transport Authority that is responsible for rail safety regulation and road, shipping and aviation issues as well. In Italy, ART has competences on passenger rights for the following transportation modes: railways, bus and navigation.

- *Regulation regime for charges foreseen by national law*

In most countries, the regulatory regime for charges intended by national law is based on a direct cost regime. Most IRG-Rail members have a multi-part charging structure. However, the approach

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to mark-ups on direct costs differs among IRG-rail countries. In fact, mark-ups are not applied in many countries and, when implemented, they appear to diverge across countries. This is also related to the choices as to public investment in the railway network that vary across countries (see Section 3.4 for a more thorough development on the impact of public compensation on charges).

Depending on the number of infrastructure managers in each country, charging practices may also differ within an individual IRG-Rail Member state. For instance, when the Directive 2012/34/EU is fully implemented within the UK, several infrastructure managers will be in scope and different mechanisms will apply for each of these in order to deliver the requirements of the Directive.

3.2 Charging review

- *Review of charging principles and the level of charges*

All regulatory bodies are required to review charging principles and/or the level of charges⁸. In some cases such as Finland, Denmark, Switzerland and Sweden, the regulatory body has to date performed a summary review or no review at all for the main IM's access charges; an extensive review having yet to be undertaken. In Italy, as said before, a new system has been implemented in July 2016 following the new regulation issued by ART last November.

Other IRG-Rail members, namely Norway, Spain and the Netherlands, review charges predominantly when dealing with complaints related to the level of charges, or when supervising negotiations.

Croatia, Greece, Finland, Hungary, the Netherlands, Norway, Switzerland and Sweden do not have the power of *ex ante* control of charging principles.

Only the French, UK and Polish regulators approve the charges. In France and Poland, all rail infrastructure managers' charges are approved every year, prior to their entry into force. In the UK the regulatory body approves the charges every five years. In Austria, Finland, Slovakia and Norway, the Ministry is also involved in the approval of charges. Germany and Italy verify access charges before they are applied. In Germany all IMs submit their charges to BNetzA, who has the right to object. In Italy, access charges must be verified by the Regulatory body, in order to assess if they are coherent with the Law and regulation. In Austria, according to § 67d EISbG (national railway act), if mark ups on direct cost charges are levied, they have to be approved by the regulatory body.

- *Documents examined in the charges review*

When reviewing the charges, the regulatory bodies examine a variety of documents. As a matter of fact, in addition to the network statement, some regulators look into accounts and regulatory statements. Depending on the country, other specific documents are examined. These range from studies or technical reports that the IMs are obliged to prepare to business plans, cost models and

⁸ For some regulatory bodies, the legal basis for this mission could be different from the transposition of the Directive 2001/14/EC or the Directive 2012/34/EU.

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charging methodologies, contracts with the State and with railway undertakings, and the opinions of stakeholders on charges. In Poland, IMs must submit applications for approval of unit rates of charges with the calculation of costs. Disparities are due to the existence of many national legal frameworks, different obligations to IMs and railway undertakings and different processes of establishing charges. In Hungary for instance, in addition to the annual charging document, the regulatory body examines the charging methodology set for a five year period.

Regarding the collection of cost data, some countries, such as France and Germany, declare having difficulties to obtain this information. Sometimes, this can be explained by the IM's lack of a proper information system (this is the case in Spain where the IM is adjusting the cost accounting model to the new charging framework). In other cases, the cost data is provided at an aggregated level, even though the IM may possess more detailed data. In the Netherlands, the regulatory body has powers to enforce power of imposing pecuniary penalties to constrain companies to provide information.

Only a small number of regulators have reported that they organise public consultations, prior to the issue of their decision on charges. This is the case of UK, France, Italy, Slovakia and Poland, for example.

- *Frequency of charging reviews*

While many regulatory bodies review the charging principles on a regular basis, a few have no regular schedule for doing so. This is the case in Denmark, Finland, the Netherlands or Sweden. In general, periodic reviewing is annual - for example Poland, Belgium, Slovakia and France - but it can be more or less frequent. In Hungary, in Italy and in the UK, the regulatory period extends to five years. Charges are reviewed every month in Slovenia, though the charging model is only reviewed when subject to changes. In the case of Sweden, the frequency of reviewing is approximately four years but it can vary across IMs and yearly plans. In the Netherlands, charges are reviewed when there has been a complaint.

Modifications within the regulatory period can also be subject to reviewing as in Germany or Hungary for example.

- *Time span of the reviewing process*

There is no common trend across IRG-Rail members regarding how long it takes to review or control charges. Regulators that perform annual reviews carry them out in a time span ranging from one month to a whole year. In France for instance, the formal review process takes two months. In Poland, the procedure for approval of unit rates of charges should last one month and, in the case of particularly complicated cases, two months. As for countries in which the regulatory period exceeds one year, more time is needed to perform the charging review. This requires approximately six months in Hungary and significantly longer in the UK.

Where the statutory time span for *ex ante* review may be short in some cases, for *ex post* controls, timescales, if any, may be less limited. For instance, the German regulator has two months for *ex*

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ante reviews but no time limit for *ex post* reviews. The Slovakian regulator also does not have a legal deadline for *ex post* reviews, while its *ex ante* reviews are limited by law to three months. In Slovenia, although the regulatory body examines the fees on a monthly basis, in the case of an appeal, it makes its decision within two months. In the Netherlands, the regulatory body has a maximum deadline of nine to ten months for a review upon complaint and five years for *ex officio* reviews.

- *Publication of the review*

Not all IRG-Rail members publish the result of their charging reviews. Some members systematically publish the review and some never have so far but intend to as is the case for the Swedish regulator. The German regulatory body only has a legal obligation to publish an annual report and an activities report every two years; however it issues press releases and publishes all decisions. In Poland, all decisions on charges for access and use of rail infrastructure are published as required under Polish law where decisions of public administrations (such as the Office of Rail Transport) are public information. The Spanish regulatory body has a legal obligation to publish the charging review as well as an annual activities report. Every citizen should have access to the text of decision. Other members only publish reviews based on complaints or *ex officio* investigations; this is the case in Denmark, Finland or Slovenia. The UK regulatory body publishes its final decision, together with any relevant consultation documentation or reports produced in the course of the five-year review. The same situation applies in Italy, where the new system of access charges was adopted, following several public consultations and a final assessment by ART on the coherence of the actual set of charges designed by the IM with the Law and regulation in place⁹.

Most regulatory bodies pay attention to the confidentiality issue regarding any sensitive information that may be contained in their published decisions or reviews. For instance, in Poland and Germany some parts of the decisions are not published if they are considered as a secret of the IM or other involved party. In Italy, the documents provided by the stakeholders during the consultations are published in their non-confidential versions.

3.3 Charging principles and costs model

- *Charging principles and regulatory bodies' review of cost assessment*

In most countries, the charging models are based (at least partly) on the principle of marginal cost pricing. In the case of Finland and Sweden charging systems are solely based on marginal costs. While some of the governments support IMs through a subsidy, others require the IM to recover some of its fixed costs through the charging framework in the form of mark-ups, as in France, Germany, Italy, the Netherlands (for one high speed line only), Norway, Switzerland and the UK.

In most countries, a multi-annual contract approved by the IM and the government, states, among other things, the amount of public subsidy for maintaining the infrastructure and a range of

⁹ All the documents of the consultations and the final decision are available on the ART website: www.autorita-trasporti.it.

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defined quality standards. In the UK, statutory arrangements play this role. There is no contract per se.

Most regulatory bodies are involved in the review of access charging. However, their roles and degree of involvement appear to diverge significantly from one country to another. All members are required to review charging principles, even though in some few cases, the regulatory body is not involved in determining the charges in any way, such as in Norway where the Government budget process determines the charges. Regulatory bodies in France, Germany, Italy and in the UK carry out an *ex ante* review of the methodology of charges calculation and of cost assessment. The ORR requires Network Rail to consult the rail industry on its methodology for calculating each charge. In addition, the ORR reviews the methodology and, for some work, appoints independent experts to subject the methodology to scrutiny and audit. A consultation of pricing scheme and network statements is required by law in Germany.

- *Costs model*

In some IRG-Rail countries the regulatory body uses cost models to review the calculation of costs.

As stated before, the charging models are, in most countries, based on the principle of marginal cost pricing, although the methods by which the marginal cost is estimated varies between countries.

Econometric approaches are already implemented by some IMs, as in Belgium, Finland, France, Netherlands, Norway and Sweden. In addition, IRG-Rail recommends the use of bottom-up engineering methods too, as they are also able to provide robust estimates of direct costs. An engineering method is implemented in Austria. French, Dutch, Swiss and UK IMs already resort to such engineering and modelling calculations. Beyond that, the Swedish Transport Administration (Trafikverket) and the ORR have developed and implemented their own top-down econometric models (and bottom-up ones for the ORR). In Italy, a mixed approach has been recently chosen. Once determined the full (efficient) cost of providing the service of access to the railway network, all non-admissible costs, as identified by Regulation 909/3015, have been dropped in order to identify the total direct costs (following a top-down approach) while the determination of the component of access charges related to direct costs associated to a specific request of track is computed on the basis of technical parameters such as mass, speed and contact wire that characterize the specific operator request (following a bottom-up methodology).

- *Costs drivers*

In their review of charging principles most regulatory bodies consider cost drivers. Most regulatory bodies interpret the cost directly incurred as a short-run marginal cost that should include operating costs (*e.g.* signalling), maintenance costs (*e.g.* wear and tear costs), and renewal costs. IRG-Rail members consider that examples of costs that are not costs directly incurred may be the cost of capital.

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For most Member States, marginal cost based charges are only differentiated by freight and passenger traffic¹⁰. Essentially, they are not broken down into smaller market segments. In general, direct costs charges do not vary by other market segments.

3.4 Investment and subsidies

- *Review of the IM's investment programmes*

Only the two regulatory bodies of France and the UK have the task of formally reviewing the investments or investment programmes of the IMs. Some other regulatory bodies may however be consulted, as part of a more general consultation procedure, on medium to long term investments plans. In Sweden, the regulator is consulted on the national transportation plan which is prepared by the transport administration and constitutes a national investment plan over a period of 10-12 years. The Spanish Railway Act, transposing Directive 2012/34/EU, also foresees a general consultation procedure, which would include the rail regulator, on the strategic plan of Network development. Finally, some regulators may have access to information on investments, without being formally consulted. The Italian regulatory body is for example informed of the content of the contractual arrangements between the State and the IM which fix the investments and the renewals over a five-year period. The German IM has to set up a business plan including investment- and financing programs. The RB has the possibility to comment the document.

In France, the regulatory body by law reviews maintenance, renewal or enhancement investment programmes for projects over 200 million euros. This review takes the form of a non-binding opinion and should assess the financial viability of the project for the infrastructure manager. Article 2111-10-1 of the French Transportation Code states that the regulator's opinion should notably focus on (1) the relevance of the revenue forecasts from the project and (2) on the adequacy between these revenue forecasts and projected investment costs.

In the UK, the regulatory body is involved at all stages of the investment lifecycle, on all capital expenditures of the infrastructure manager, including maintenance, renewals and enhancements. Its role notably consists in determining the efficient price of the infrastructure investment at the beginning of the Control Period (5 year-period), monitoring it through-out development and delivery and then determining the actual value of addition to the Regulatory Asset Base. To do so, the UK rail regulator analyses a series of documents (e.g. Project Management Plan, Asset Management Plan, Estimate Report, benchmarking and unit rate analysis, Investment Paper, etc.). The infrastructure manager is incentivized to deliver the project at the target price, which is set at the regulator's efficient determination of price¹¹. Any change to the target price throughout the lifecycle of the project is monitored and approved by the UK regulatory body.

- *Financing of the IM's investment programmes (replacement, expansion and maintenance investments)*

¹⁰ This is not the case for Italy, as explained above.

¹¹ Note that target prices may be set for individual projects or efficient cost may be calculated for a portfolio of projects. In case of a portfolio, the infrastructure manager is able to overspend on one project, provided that there is no net change on the overall portfolio cost.

The IMs are largely financed either by governments (subsidies), railway undertakings (infrastructure charges) or the European Union (European funds). Some infrastructure managers also receive other income as in UK for example, where Network Rail receives income from property. For all IRG-Rail members, the IMs receive subsidies to finance its investment programmes. In Norway, for example, the IM is fully financed by the Ministry of Transport. In other countries, public grants represent a high percentage in terms of the costs that are covered. This percentage may change depending on the type of investment (replacement, expansion and maintenance). For example, in Finland approximately 90% of the IM's expenses (including expansion investments) are funded by the State budget. In Greece, no less than 70% of the total costs are subsidized by the State. In Italy, State provides funds for investments in the conventional network (fully covered) and High Speed Network (partially); renewals and maintenance are financed by the State.

Investment programmes can also be cofounded by European Union funds. This is the case for example in Denmark, Hungary, Greece, Croatia, Italy, Germany and Poland. In Hungary, for example, the major renewal and upgrading works are mainly funded by EU funds. The maintenance cost, on the other hand, is financed using the IMs' incomes.

In some countries, such as the Netherlands, Sweden, and Poland new infrastructure projects (expansion investments) are generally financed by the State, whereas renewals, expansions and upgrades of the existent infrastructure are financed by the IM. The IM also receives government subsidies to finance these expenses. In Sweden, the state essentially finances both development and maintenance of infrastructure. The principle has been that the government deducts track charges from the Swedish Transport Administration's appropriation needs and assigns the difference. In the Netherlands, for example, about 75-80% of the operation and maintenance costs incurred by the IM are financed by subsidies. In Sweden this percentage rises up to 85%.

In contrast with this subsidy allocation depending on the type of expense, the UK IM receives a grant from the relevant governments which is not allocated towards a particular category of expenditure although the governments have specified what enhancements should be delivered within the same five year period of time.

In France, new investments are mainly financed by public subsidies and private funds (private funds are predominant in the case of concessions). The national legislation states that the investments incurred by the IM should not result in "bad" debt.

- *The impact of public compensation on charges*

High level impact of public compensation on charges

The railway networks regulated by IRG-Rail members are natural monopolies. As such, the question of the recovery of costs and, in particular of fixed costs, is central. Directive 2012/34/EU foresees a charging system based on direct costs (Article 31(3)) to which mark-ups that consider the competitiveness of the market segments may be added, in order to obtain full recovery of the costs incurred by the infrastructure manager (Article 32(1)). In addition to this charging system, Article 8(2) allows EU Member States to provide the infrastructure manager with public

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compensations. Given this framework, it can be argued that the level of public compensation necessarily impacts the overall level of charges paid by railway undertakings. Indeed, the Recast does not impose on Member States to levy mark-ups in accordance with Article 32(1). Thus, depending on the level of public compensation provided to the infrastructure manager, charges may be set at the directly incurred costs or mark-ups may be introduced to cover a larger share of the full costs of the network.

The impact of public compensations on direct costs and mark-ups

Concerning individual charges, the level of directly incurred costs in a given country must not be impacted by public compensation as this charge should only reflect the additional costs incurred as a result of operating the train service. For countries which levy mark-ups and in the context of full recovery of costs incurred by the infrastructure manager, two diverging approaches may be used to set the level of these charges. In countries such as Spain, Finland, Slovakia or Greece, the level of charges is calculated in a first step. Then, public compensations, and in particular government subsidies, are set to balance the accounts of the infrastructure managers. An opposite approach is taken in Italy, the UK or Germany. In these countries, the level of public compensation is set first and the level of charges is then derived so as to cover the full costs incurred by the infrastructure managers. Using one methodology instead of the other to calculate mark-ups is likely to impact their level. In Italy, the length of the regulatory period is set at 5 years that is also the duration of the contract between the State and the IM for the public subsidies for investments and maintenance.

The impact of public compensations on amounts paid by RUs

Public compensations may also be used to impact the amounts paid by railway undertakings, rather than the level of charges. This is for instance the case in Italy and France where governments have chosen to support the railway freight sector. In France, the governmental support applies to all freight traffic while in Italy it only concerns freight traffic towards or from the South of the country. In both states, the concerned freight services do not pay the full charges set by the infrastructure manager. In Italy, the government subsidies, at the moment set for three years, cover the full amount of charges to the railway undertakings that benefit from the incentive. Moreover, in most countries, indirect public contributions are also made to the infrastructure manager to cover part of the track access charges of railway undertakings operating under public service contracts. In 2014, the German Federal Government provided regional transport authorities about 7.3 billion euros for the organization of regional passenger transport, of which 3.1 billion euros were used to cover part of the track access charges for these services. The overall level of contribution increased in 2015 and reached 8 billion euros in 2016. France has a similar organization in which the federal government pays for part of the track access charges of regional and national public services. In 2016, this contribution represented approximately 2 billion euros.

Breakdown of IMs' revenues between access charges and public compensations

As underlined in the previous subsection, public compensations represent a substantial part of the revenues of the infrastructure manager in most IRG-Rail Member States. In Greece, around 70% of the revenues of the infrastructure manager come from public compensations. In Slovakia, public subsidies amount to around 80% of the IMs' incomes, while in Finland they represent 90%. The

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rest is covered by access charges. In Norway, no access charges are currently levied with the exception of two lines. In this country, over 99% of the infrastructure manager's revenues come from public compensation. The breakdown of incomes between charges and subsidies within a country may vary for different parts of the network. For instance, in Spain, public subsidies represent 90% of the infrastructure manager's revenues on conventional lines, whereas they only represent 45% on high speed lines.

Time periods for the determination of public compensations

Depending on the country or the source of financing, the level of public compensation may be set for different time periods. In countries such as Finland and Norway, public compensations are decided on an annual basis. In Germany, Italy and the UK, the bulk of public compensations is set for multi-annual periods. In the UK, the Department for Transport (for England and Wales) and Transport Scotland (for Scotland) pays a Network Grant to the infrastructure manager for a five year period. In Italy and in Germany, part of the public compensations is included in the contract between the State and the infrastructure manager, for a period of five years. In Germany, some public compensation such as infrastructure upgrading subsidies is set on an annual basis.

3.5 Other cost and accounting issues

- *The cost of capital*

Only a few regulators review the cost of capital included in the pricing of the infrastructure. This is the case of Austria, France, Germany, Hungary and the UK. The methodology that prevails when determining this cost of capital is a CAPM/WACC approach. In Italy, the regulatory body has identified criteria for the determination of the parameters used in the CAPM/WACC formula, and for some of them, the specific economic values to fill in the formula.

In France and Germany, the cost of capital is considered as a fixed cost. In Hungary the cost of capital is divided into direct and indirect costs.

- *Definition of complete cost*

France and Italy are among the countries where the national legislation provides a definition for the full cost of the infrastructure. Article L. 2111-10 of the transport code states that the complete cost corresponds to all the charges borne by the IM related to construction, operation, maintenance and renewal of the infrastructure, including the amortization of investments and the remuneration of the capital invested by the IM. In Italy, the same content is provided by Article 16(1) of the national Legislative Decree 112/2015 that implements the Recast.

- *Charges based on article 32.3 of the Directive 2012/34/EU*

Four IRG-members reported that the IMs base part of their charges on article 32.3 of Directive 2012/34/EU (recovery of long term cost). This is the case for the Dialbolo project in Belgium, for the single rail line between Kerava and Lahti in Finland, for the high speed line Amsterdam-Breda-

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Belgian border in the Netherlands, for the high speed line Turin-Milan-Rome-Naples in Italy and for the rail line between Stockholm and The Arlanda airport in Sweden.

- *The regulatory asset base*

In four IRG-Rail members a regulatory asset base is determined for charging purposes. This is the case in Croatia, Germany, Italy and the United Kingdom. In Germany, Italy and the United Kingdom the calculation is based on both internal data (cost data) and external data (annual report). In Croatia the estimation is only based on internal data.

- *Valuation of assets*

Only a few regulators reported having a national law or a practice for valuing assets for consideration within the calculation of charges. In Austria, Croatia and Finland use an historic value approach for the value of assets. Instead, the Netherlands estimate forward looking maintenance and renewal costs. Germany uses the historic costs based on the balance sheets, but corrections are made considering important changes in current costs. In Italy, the net book value of the assets used in operating the train service, with the exclusion of the assets financed by public subsidies, is taken into account for the computation of the cost of capital; IAS and IFRS apply.

3.6 Efficiency

Some regulatory bodies review the efficiency of the infrastructure manager. The ORR reviews the regulatory accounts and produces an annual efficiency and finance assessment of Network Rail. The ORR's *final determination* sets the complete costs of Network Rail with respect to some efficiency assumptions on costs that allow reaching the outputs set by railway funders. Then, the assumptions ORR has made on the level of Network Rail's maintenance and renewals expenditure will be reflected in the level of charges that operators pay, given that charges are set to be cost reflective. Those assumptions are made *ex ante* for the five year control period.

The French and the Dutch IMs also include efficiency targets within the annual evolution of (some) charges. In Italy, after a process of consultation a target of an annual rate of 2% of reduction in total costs was adopted by the Regulatory body for the first regulatory period (2016-2021). Nevertheless, those efficiency evaluations remain far less sophisticated than the British ones. The latter involve top-down and bottom-up efficiency assessments.

3.7 Market segments

Regulatory bodies are responsible for controlling the list of market segments that is listed in the network statement of the infrastructure manager (article 32.1 of Directive 2012/34/EU).

There are several important differences in the approach used with regard to mark-ups and market segmentation. The latter are not applied in all countries and, when applied, they appear to differ across countries.

French, Italian, German (considering the new legislative framework after the transposition of the Recast) and UK IMs for example, consider market segments when calculating charges. In general,

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market segmentation differentiates passenger services from freight traffic. Some sub segments may complete the freight segmentation, as it does in the UK and in Germany (considering the new legislative framework after the transposition of the Recast). On the subject, a specific analysis is provided in the “Initial approach to market segment definition and criteria for an assessment of mark-ups in consideration of Directive 2012/34/EU” (IRG-Rail, 2016).

3.8 Performance regime

Almost all members of the IRG-Rail have a performance regime included in their national legal framework. In Denmark there is a performance regime on the payment for the use of the state owned rail network and on the environmental subsidy to freight transport. In the Netherlands, there is a performance regime included in the Network Statement and it is agreed with railway undertakings in their access agreements. A performance regime can also be tailored to fit for a particular railway undertaking.

3.9 Traffic forecasts

Only five regulators challenge the traffic forecasts made by the IM as part of the examination of charges. In the Netherlands, the charges are corrected by the IM *ex ante* on the basis of capacity applied for and extrapolations of volumes in previous years. In Germany traffic forecasts are also challenged during the *ex ante* examination of charges. The forecast of passenger train km is based on an extrapolation of current train km by knowledge of additional or fewer service requirements or by changes in train km due to construction sites. Freight train km are projected with the help of an internal analysis on the basis of general economic figures. In Poland, the regulatory body examines the forecast for operational work of the IM for each category of lines and weight. In case of a significant difference with the charge of the last timetable, the regulatory body asks the IM to provide a justification. In Italy, traffic forecasts over the regulatory period (5 years) are estimated by the IM on the basis of a consultation of the railway undertakings and their consistency is evaluated by the Regulatory body.

In the UK, the majority of charges are not that sensitive to demand forecasts, because they are calculated per unit of traffic. However, when traffic forecasts do affect the level of charges, they are challenged *ex ante*.

3.10 Complaints

Some regulatory bodies declared having received complaints on charging issues. Some of them, as Croatia, Denmark and the Netherlands have received a reduced number of complaints (one for the case of Croatia, two and a court case for the case of Denmark and three for the Netherlands). In Denmark, two complaints have been received on charging issues. The first complaint concerns the charging principles of a previous ton-kilometre charge for freight trains (case JN34-00006). The second one, from the same freight operator, lies in the continuity of the first one: this complaint (case JN34-00018) focuses on the calculation of the level of charges resulting from the decision of the Danish RB in case JN34-00006. The Danish rail Regulatory Body was also summoned by the

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Court in a court case issued by a freight operator upon Rail Net Denmark as a consequence of JN34-00018. In the Netherlands, one complaint was related to the costs included in the minimum usage charge proposal for 2010, which included some fixed costs. Other countries such as Poland and Germany receive complaints on a more regular basis. For example, the Polish regulatory body states that the most common complaints are from rail carriers regarding the method and accuracy of the IM's calculation of charges for basic service for the minimum access to the infrastructure. The German regulatory body has received complaints on diverse topics, such as the level of price, price discrimination, performance regimes, billing errors and network statements.

4. Annex: Summary of charging systems by IRG-Rail members

4.1. Austria

In Austria there are two charges for the minimum access package:

- the basic charge 1 is based on train-km and is different between three different market segments and between five different route categories;
- the basic charge 2 is charged on gross-tonne km and this shall cover the cost for repair and renewal. Incentives and mark-ups are added to the basic charges.

Charge	Unit	Differentiation	Cost covered
Basic Charge 1	€/train-km	Route category (5) Market segmentation (traffic) (3)	Marginal cost and part of fixed costs
Basic Charge 2	€/gross-ton km	No market segmentation	Cost for repair and renewal
Incentives and Mark-ups	€/train-km	Incentive for capacity optimisation (1) Corridor-specific Freight Traffic Incentive (2) Engine classification (3) Congestion charge (1)	
Performance regime	€/min delay	To reduce disturbance in the rail network, a charge will be levied for each additional minute of delay on selected trains if the delays are attributable to causes which can be influenced. Unit is by delay in minute (capped) attributable to IM or RU.	

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4.2. Denmark

Charges for 2016 are levied as laid down in Danish Railway Act n° 686 of 27 May 2015 § 21 point 1, a national statutory order from the Transport Ministry n° 1379 of 1 December 2015 on payment of use of the state owned rail network and on environmental subsidy to freight transport on railway and a national statutory order from Rail Net Denmark n° 1357 of 27 November 2015 on infrastructure charges for the state owned rail network. The charging scheme is based on direct costs.

In 2016 The IM (Banedanmark) introduced a charge based on direct costs and train.km. The charging system will include a uniform charge (in DKK/train.km) for both passenger and freight trains and a bridge charge.

The charge is calculated on the basis of the directly costs to maintenance of the tracks for the period 2009-2020. For the period 2009-2013 the calculation is based on real costs and train-km. For the period 2014-2020 the costs and train-km are estimated.

The directly costs are related to the maintenance of the tracks only. At the moment the IM is not able to separate other expenses concerning the directly use of the tracks.

The IM has calculated the charge DKK 4,80 (0,64 Euro) each Train-km. (2015 price level). This charge will be regulated yearly by an index based on the general level for prices and wages.

Charge	Unit	Differentiation	Cost covered
Charge	DKK/train.km	No market segmentation, but some kinds of transportation are free of charge	Direct costs
Incentives and Mark-ups	DKK/train.km	Incentives for capacity optimization No mark-up is levied	
Performance regime	DKK/min delay	To reduce disturbances on the rail network, a capacity charge is levied for delayed trains. The IM has to pay a charge to the railway company for delays attributable to him and under different circumstances.	

In Croatia charges for minimum package of access services are based on the costs directly incurred as a result of operating the train service and they are applied on non-discriminatory terms to all rail companies. Fee for minimum package of access services is calculated through formula which is published in Network Statement by infrastructure manager. Based on formula every railway undertakings can calculate the cost of using rail infrastructure.

Track access charges for the minimum access package are calculated considering:

- the number of train kilometres performed on certain line categories;
- type of power car;
- type of towing vehicle;
- weighting of the line category;
- coefficient of the power car category.

The calculation of charges for minimum access package takes into account the part of the cost which is directly incurred as a result of operating train service, in particular the part of the cost of maintenance and renewal and rail traffic management.

The calculation of charges for minimum access package doesn't include cost which are not directly incurred as a result of operating train service, in particular administration cost, financial cost and indirect cost.

Charges depend on train km and they are different on the basis of six different line categories and weight of trains.

Charge	Unit	Differentiation	Cost covered
Minimum Access			
Access	€/train.km	Differentiation between freight and passenger trains. Freight: train km change with weight category. Passengers: train km change with weight category. Line category (7) Main line (3) Regional line (4)	The costs directly incurred for running the railway service (for instance maintenance and renewal, rail traffic management).

4.4. Finland

Track access charges include three components: basic charge, infrastructure tax and, for a single rail line, investment tax.

Charge	Unit	Differentiation	Cost covered
Basic Charge	€/gross tonne.km	Passenger and freight traffic	Marginal cost
Infrastructure tax	€/gross tonne.km	Passenger traffic, freight traffic (electricity) and freight traffic (diesel) Currently not charged for freight traffic. For passenger traffic this component is small (< 10 % of the basic charge)	Origin in environmental and accident costs
Investment tax	€/gross tonne.km	No	Charge based on article 32.3 of directive 2012/34/EU Charged for a single rail line: Kerava – Lahti
Performance regime		A rail operator shall compensate the Finnish Transport Agency (IM) if the operation of the rail operator essentially differs from the rail capacity allocated to it for a reason due to the operator, and such a deviation impedes the functioning of the railway system. The Finnish Transport Agency shall compensate a rail operator if, for reasons due to the Finnish Transport Agency, the availability of the rail network essentially differs from the rail capacity allocated to the operator, and such a deviation impedes the functioning of the railway system.	

4.5. France

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In France, the charging system implemented by SNCF Réseau¹² is based on a three-part tariff regime for activities under a public contract (e.g. regional trains) and a two-part tariff for the other activities (e.g. high speed trains). An additional charge is applied in both cases but only to trains using electric traction facilities.

As defined in the French Decree No. 97-446 of 5 May 1997(amended), the current charging system includes running charges, reservation charges and access charges (only for activities under a public contract). As of 2016, a charge for the use of electric traction facilities, corresponding to the variable costs of using electrical traction facilities, was added to the charges reflecting the minimum access package.

In application of article L. 2133-5 of the French Transportation Code, ARAFER has the duty to issue a binding opinion on the charges set by SNCF Réseau for the use of the infrastructure. Since its first opinion in 2011 on timetable 2012, ARAFER has repeatedly identified elements of SNCF Réseau's structure of charges that needed to be revised and proposed some modifications to do so, notably with the entry into force of directive 2012/34/EU in mind.

In its opinion n°2015-004 of 3 February 2015 on timetable 2016, ARAFER has observed that a number of previously identified shortcomings of SNCF Réseau's charges still had not been addressed. Thus, ARAFER has asked SNCF Réseau to commit to a complete overhaul of its structure of charges within a reasonable delay and has set a binding deadline for timetable 2018. ARAFER has, in particular, asked for the revision of the following elements:

- the cost model used to estimate directly incurred costs;
- the indexation of charges;
- the charges reflecting the scarcity of capacity;
- the definition of market segments and the application of a market test to all mark-ups.

Charge	Unit	Differentiation (as implemented by SNCF Réseau in the Network Statement for 2016)	Cost covered (as laid down in Decree No. 97-446 of 5 May 1997)
Running charge	€/train.km	Type of service/train The charge is issued only if the reserved path is run	Variable costs for operating, maintenance and renewal
Access charge	€/year	Only for activities under a public contract (TER, Transilien and TET)	Fixed costs for operating, maintenance and renewal
Reservation Charge	€/ path.km	Period of the day Route category Crossing Paris area or not on high speed lines Regional routes on high speed lines Speed (freight) High speed trains where the origin (destination) is or not Switzerland	0-100% of the cost of capital Mark-ups "if the market can bear this" Costs related to capacity constraints
Charge for the use of	€/train.km	This charge is only applied to trains using the electric traction	Charge corresponding to the variable portion of

¹² The other infrastructure managers regulated by ARAFER are not considered here.

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<p>electric traction facilities (RCE)</p>		<p>facilities</p>	<p>costs for using electrical traction facilities</p>
<p>Performance regime</p>	<p>€/minute</p>		<p>Penalties for disrupting the operation of the network and compensation for actors which suffer from disruptions</p>

4.6. Germany

The following description is for the track access pricing scheme 2017. For 2018 elements will change due to the transposition of the recast into German law in 2016.

The charging system for the minimum access package is composed of a user-dependent component (route category, train path product), a service-dependent component (incentive system and deviation from minimum speed), a noise differentiated component and other components (load component, offer charge etc.). The charging unit is the train path kilometre.

Charge ¹³	Unit	Differentiation	Cost covered
Basic price	€ / train-path.km	12 route categories	Sum of revenues should cover the costs of the IM (full costs - meaning total cost – minus public payments and plus return on investment)
Train path product factor	Factor (x 0.5 up to x 1.8)	7 product factors (4 for freight trains, 4 for passenger trains)	
Minimum speed	Factor (x 1.5)	Where a minimum speed of 50 km/h is not achieved on long distance routes and urban rapid transit routes	
Performance regime	10 ct / delay minute, capped attributable to IM or RU	To reduce disturbance in the rail network, a charge of 10 cents will be levied for each additional minute of delay on selected trains if the delays are attributable to causes which can be influenced. Passenger transport ≥ 6 min, freight transport ≥ 31 min.	
Load component	1,00 € / train-path km	For trains > 3000 tonnes	
Charge for preparing an offer	80 € / offer	Charge in case a train path ordered is not taken up (a processing fee per train path is charged for not accepting a train path offer)	
Cancellation charge	€ / train. path (offer)	A minimum cancellation fee is to be paid for a cancellation amounting to the fee required for preparing the offer. In addition, a percentage-based cancellation fee will be levied depending on when the cancellation was made and the standard fee for the cancelled train path or cancelled part of the train path. The cancellation fee will not exceed the equivalent of the foregone access charge for the cancelled train path.	
Noise differentiated track access charge (NDTAC)	Malus in percent of the basic price; bonus in cents per axle-km	NDTAC addresses only RUs and consists of two components. Loud freight trains have to pay a noise-based surcharge on top of their train access charge. The surcharge amounts to 2.5 per cent. Furthermore, RUs receive a bonus amounting to 0.5 cents per axle-kilometres (maximum 211 EUR per axle) for the use of retrofitted freight wagons based on the mileage generated. Quiet freight trains are excluded from paying the surcharge if they submit	

¹³ Figures are copied from DB Netz AG (2015), The Train Path Pricing System 2016 of DB Netz AG.

		<p>appropriate documentation. A train is defined as quiet if it consists of at least 90% of quiet wagons.</p>	
<p>Further components</p>		<p><i>e.g.</i> Diminution of track charges due to bad infrastructure quality. (Reduced charge if the condition of the track infrastructure does not comply with the terms of the contract: If the condition of the track infrastructure, the related command and control technology and/or the facilities for the supply of traction current do not comply with the terms of the contract, DB Netz AG will reduce the infrastructure usage charges upon own initiative or upon advice).</p> <p><i>e.g.</i> On-demand train path (last minute request, optional path): RUs can apply for a maximum of 15% (calculated on the basis of the train path kilometres) of their total number of registered train paths as optional train paths. If the optional train path is used, the corresponding train path price is to be paid. If the optional train path is not or only partly used, a reservation charge for the unused part of the train path will be levied. The reservation charge depends on the charge levied for the unused optional train path.</p> <p><i>e.g.</i> Pre-designed train path: for the promotion of the use of lines with a low level of utilisation, the IM offers free capacity on such lines in the form of pre-designed paths after the drafting of the working timetable. Those train paths are offered at a discount of 10 % on the regular usage charge. The discount is only granted if train paths are ordered in unaltered and complete form; no entitlement to the provision of pre-designed train paths.</p> <p><i>e.g.</i> Limited-period discounts: On lines with a low level of utilisation, the IM grants limited-period discount. These are designed to act as an incentive to use alternative routes with a low level of utilisation. (Actually one line and discount of 40%).</p> <p><i>e.g.</i> Discounts for new services: As a means of promotion for new train services, the IM grants all access parties limited period discounts in the form of a percentage discount on the regular usage charge on certain line sections (10% on train path charge).</p>	

4.7. Greece

The infrastructure management charging system is constituted of a basic cost which includes the cost of track maintenance and operational services. Where appropriate, it also includes additional charges such as electrification and special costs.

There are two basic charges, each per train.km, one concerning operation services (0.65 euros per train.km) and the other concerning track maintenance (0.40 euros per train.km). Each one of these charges is to be multiplied by two factors. The first factor for the operation services (for the first quantity) has to do with the relation of the day time period of the route with the peak one and ranges between 0.7 and 1.2 and the second factor for the operation services (for the first quantity) has to do with the relation of the whole time of the route in the timetable in relation with the ideal minimum time that a typical fast train can operate this route without intermediate stops and ranges roughly between 1 and 1.5. The first factor for the track maintenance (for the second quantity) is related to the quality of the track and ranges between 0.53 and 0.90, while the second factor for the track maintenance (for the second quantity) is related to the axial load, the total load and the speed of the train and ranges between 1.0 and 9.61 . The sum of the two quantities gives the charge per train.km.

Charge		Unit	Differentiation	Cost covered
Basic cost	Operation	€ / train.km	Categorization of routes based on peak periods Burdening line capacity	≤ 30% of the actual cost (accrued expenditure) of maintenance and operating
	Maintenance		Maximum speed The train's composition (number of axes) The mean axial load Quality of infrastructure provided	
Additional costs	Electrification	€ / train.km	Whenever using a route which operates under electrification	
	Additional charges depending on the case	No charge per unit : charging on a case-by-case basis	Special- dangerous consignments	

4.8. Hungary

The Hungarian State Railway (MAV Co.) was established in 1992. In 2000, an internal separation of accounts occurred. Different entities were created in order to manage the main activities. In 2003 the first Hungarian Network Statement was released and opened the way to foreign RUs on the network in 2004 (4 freight companies at the end of the year). The same year, the independent Rail Capacity Allocation Body was created. In 2006, the Hungarian Railway Authority was set up. The Hungarian network has a total length of 7700km. It is owned and managed by the Infrastructure Management Business Unit that is a separate organisational entity, however still part of MAV Co.

The Győr-Sopron-Ebenfurti Vasúti Co. (GYSEV Co.) was founded in 1872 and is owned mainly (94%) by the Hungarian and the Austrian State. The company operates in the North-Western region of Hungary and Austria. In Hungary GYSEV provides IM (in its geographical area) passenger and traction services and is considered as one of the two national PSO companies and also has a freight company (GYSEV Cargo) legally separated since 2010. The GYSEV network has a total length of more than 400km.

The main principles of the access charge are the following:

- no discrimination between RUs should take place;
- prices set by the IMs must reflect the total justified costs;
- differentiation of the pricing system;
- bottom-up (engineering) approach;
- long term orders are preferred.

Charge	Unit	Differentiation	Cost covered
Minimum access package	Number of paths Train.km	Path allocation Train running	MAV Co. is seeking a full cost recovery without profit
Access to service facilities	Electric train.km Number of stops Train departures/destination Number of cases Number of wagons Number of wagons Number of wagons Person/hours Number of cases	Use of overhead catenaries Passenger train stops Passenger train departures/destinations Freight train start/interim/destination usage Freight wagon access to loading/unloading tracks (station usage for serving) Rail vehicle storage Access to weighting facilities Additional personnel Freight train check in	Shall relate to the cost of providing it, calculated on the basis of the actual level of use
Additional services	Number of wagons Number of wagons Number of wagons Number of cases	Marshalling, shunting and consignment of freight wagons Weighting Change of axles Forwarding of dangerous and	

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	Hours	outsized goods Usage of normal gauge bogies	
Ancillary services	Number of cases	Education and examination of personnel	

4.9. Italy

In Italy, the charging system in place applied to the all lines is based on the economic regulation issued by ART in November 2015 (Decision 96/2015), that follows the Recast criteria and principles as well as all other relevant EU regulation (in particular, Regulation 2015/909 and Regulation 2015/429)¹⁴. The new regulatory framework includes both costing and pricing rules as well as it introduces regulatory accountability obligations on the IM and different verification procedures along all the regulatory period that last 5 years.

The identification of the perimeter of admissible costs to be recovered by the IM with access charges follows these principles and criteria: (i) only the relevant costs for operating the train service are considered, distinguishing direct costs from other costs; (ii) a full (efficient) cost approach, where a 2% annual efficiency target on operative costs is set for the IM; (iii) the CAPM/WACC methodology for the computation of the cost of capital is adopted.

The pricing established by the IM is modulated in components: (i) direct costs (depending on mass, speed and contact wire related to the rolling stock used by the railway undertaking); (ii) mark-ups; (iii) other components (for scarcity, environmental incentives, ETCS, etc.).

In July 2016, the Italian IM adopted the access charges for the regulatory period 2016-2021. The new set of charges successfully passed the verification procedure set by the Regulatory body. It foresees 24 different market segments that belong to 8 main categories: technical services, maritime services, PSO regional passenger services, PSO national passenger services, OA international passenger services, OA basic national passenger services, OA national premium passenger services, freight services.

In the table below the principal elements of the access charges system according to the regulation issued by ART in November 2015:

Charge	Unit	Market segmentation	Cost covered
Access charges: A component	€/train.km	Depending on the mass, the speed and the use of contact wire by the rolling stock used by the railway undertaking	Direct costs (following Regulation 2015/909)
Access charges: B component	€/train.km	-Market segments -Track category -Slot time -market segments	Other costs than direct ones, such as the cost of capital and depreciation
Access charges: C component	€/train.km	-Scarcity -Environmental effects -ETCS -Regional compensation regimes	Cost based

¹⁴ Italy implemented the Recast with the Legislative Decree 112/2015 in July 2015.

4.10. Latvia

The main principles of the access charges are developed hereafter¹⁵:

- the full cost of infrastructure should be covered by accumulated charges and state budget funding if it is available;
- all expenses are traced to particular train category;
- Train-kilometres and gross tonne-kilometres are used as cost drivers.

Charge	Unit	Market segmentation	Cost covered
Operating	Train.km	Differentiation among: <ul style="list-style-type: none"> - Freight trains; - Passenger trains (electric); - Passenger trains (diesel); - Passenger trains with locomotive; - Narrow-gauge trains. 	1/ Costs of maintenance of railway infrastructure objects made by IM; 2/ Costs of railway infrastructure objects development (renewals, reconstruction, building) consists of capital depreciations costs (excluding capital depreciations costs of government, EU funds) and premium costs; 3/ Duties and taxes paid by IM

¹⁵ In order to transpose Directive 2012/34/EU, currently responsible institutions and stakeholders in Latvia have started to develop new charging scheme. Significant changes are therefore planned.

4.11. Luxemburg

Charge	Unit	Differentiation	Cost covered
Minimum service			Equals the cost that can be allocated directly to running the railway service and include a fee for scarcity of access to infrastructure capabilities
Access and request of path	Train path.km	Regular train path Pre-arranged extraordinary train path Tailor made extraordinary train path	
Operation of path (track wear)	Train path.km	Freight train Combined transport freight train Motor-driven passenger train Passenger train Running locomotive	
Capacity / congestion charge	Train path.km		

Note: A performance regime is applied with penalties and compensations

4.12. Netherlands

Charge	Unit	Differentiation	Cost covered
Access Variable Usage Charge	train.km / tonne.km	Differentiation between freight and passengers Freight: train km by graduated weight category Passengers: train km by graduated weight category	Covers the incremental cost of operating a train on the network. Measured by a percentage of wear and tear cost in total maintenance costs.
Electrification: use of electrical wire	€ per KwH	No segmentation, defined by km per train type/weight, train type and speed (actual usage in case gauges have been fitted)	Covers cost of transport of electricity only, wear and tear of wire not included
Access via rail to railway stations	€ per stop per train category	Six categories of stations (by size/number of passengers). Three train categories defined by percentage of stops on their total route. Category A: stops at max. 15% of stations on route Category B: stops at max. 50% of stations on route Category C: stops at 51-100% of stations on route	Recovery of ProRail's part of station maintenance; ProRail does not own the stations, but has a right of use of the tracks and passenger corridors to and from platforms. Charge covers only the costs involved with corridors (cleaning and maintenance)
Shunting and parking	€ per meter of track / day / month year	Two categories: service areas controlled centrally/ decentrally (switch points controlled locally or centrally)	Covers incremental cost of track wear and tear measured by a percentage of maintenance cost

4.13. Norway

The domestic legislation states that charges for the minimum access package must equal the costs that are directly incurred. However, in practice, infrastructure charges are determined yearly through the Government budget process. The charge is based on direct social marginal costs. The social marginal costs of passenger railway transport is considered to be negative (because of positive externalities), hence there are no charges. To stimulate a transfer of transport to railway from other transport modes, there are no charges for freight traffic either. Only heavy freight trains (axle load above 25 tonnes) are levied a charge, which only applies to the transport of iron ore on Ofotbanen. However, with the implementation of 2012/34 and the ongoing railway reform in Norway, a charging regime in line with the legislation is foreseen.

Charge	Unit	Differentiation	Cost covered
Access Variable Usage Charge	NOK/train.km	Charge only levied for freight trains with axle load above 25 tonnes	Assumed incremental costs for maintenance and renewal as a result of running a train with axle load above 25 tonnes
Operating charge	No	n/a	None
Reservation Charge	No	n/a	None

4.14. Poland

In Poland charges for the minimum access package are based on the costs directly incurred as a result of operating the train service and they are applied on non-discriminatory terms to all rail companies.

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The unit rates of these charges must be submitted, together with the calculations of their values, to the President of the Office of Rail Transport. The President of the Office of Rail Transport approves the unit rates of charges within 30 days of the receipt or refuses to approve them if there is any infringement of calculation rules.

The calculation of charges for the minimum access package takes into account the part of the costs which is directly incurred as a result of operating the train service, in particular the part of the costs of:

- maintenance and renewal;
- rail traffic management;
- depreciation, if it is determined on the basis of the actual wear of the infrastructure attributable to traffic.

The calculation of charges for the minimum access package does not include costs which are not directly incurred as a result of operating the train service, in particular:

- the administration costs;
- infrastructure safety and public order in railway area;
- the financial costs;
- the indirect costs

Charges depend on train-km and they are differentiated on the basis of five different line categories and weight categories of trains. For passenger services there are 16 weight categories of trains and for freight services - 37 weight categories of trains. The line categories are determined on the basis of traffic intensity and speed limits.

The basic charge may be increased during periods of congestion on a particular rail line or its section with insufficient capacity.

The IM may increase the basic charge, if it proves that the expenditures have been incurred in made to:

- improve insufficient capacity of a particular line, or;
- to avoid negative impact of rail traffic on the environment, provided that the increase in charges will be comparable to those used by the competing modes of transport.

The IM may grant discount on the basic charge. Discounts may be granted for a limited time and on a particular section of the infrastructure:

- to develop new rail services;
- in order to use the railways with a significant unused capacity, or;
- if the savings were made in the management of railway infrastructure by the IM.

Charge	Unit	Differentiation	Cost covered
Operating charge	PLN/ train. km	- Freight/passengers services - Weight categories of trains 16 for passengers services, 37 for freight services) - Line categories (5)	The costs directly incurred, <i>i.e.</i> the part of the costs of: - maintenance and renewal; - rail traffic management; - depreciation, if it is determined on the basis of the actual wear of the infrastructure attributable to traffic
Reservation/ Cancellation Charge	% charge		Depends on the term of cancellation
The additional charges			The additional charges shall be determined on the same basis for all carriers, so as to ensure the financing of the costs which the IM will have to bear providing the expected range of available railway infrastructure, plus a margin of not more than 10%.

The IM can levy higher charges (excluding transport for which the minimum unit rate basic charge is used and transport dependent on public funding), if the market can bear it that is, on the case it has been established that the increased charge does not result in the shift to the road transport. IM undertakes 'market can bear tests' no less than once every three years, taking into account the division of the market into at least the following pairs of types of services:

- 1) passenger services/freight services;
- 2) regional passenger service/ sub-regional passenger services ;
- 3) trains carrying dangerous goods /other freight trains;
- 4) domestic services /international services;
- 5) combined transport / direct trains;
- 6) block trains / single wagon load trains;
- 7) regular in services / occasional train services.

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4.15. Slovakia

The Slovak Republic is preparing a new regulatory framework and new data will be available in 2017 or 2018.

	Charge	Unit	Differentiation	Cost covered
Minimal access package	ordering and allocation of capacity	€ per train.km		Variable costs and fixed costs are extracted
Minimal access package	management and organization of traffic	€ per train.km		Variable costs and fixed costs are extracted
Minimal access package	operability of infrastructure	€ per 1000.gross tonne.km		Variable costs and fixed costs are extracted
Track access to service facilities	Electrical supply facilities	€ per 1000.gross tonne.km	different for passenger and freight transport	Variable costs and fixed costs are extracted
Track access to service facilities	Access to passenger stations, buildings and facilities	€ per stop	different for passenger and freight transport	Variable costs and fixed costs are extracted
Track access to service facilities	Access to marshalling yards and freight terminals	€ per stop	different for passenger and freight transport	Variable costs and fixed costs are extracted

4.16. Slovenia

In February 2013 the Public Agency for Railway Transport (the allocation and safety authority), who is competent for determining and collecting track access charges, implemented a new charging methodology, based on direct costs. Track access charges for the minimum access package are calculated considering:

- the number of train kilometres performed on certain line categories
- type of power car;
- weighting of the line category;
- the coefficient of the power car category;
- cost of supplement / deduction for the type of transport.

User fee for minimum access package are based on costs, which are directly incurred by train operations. The difference with full costs is subsidized by state funding. To date Slovenia has not taken the decision to introduce mark-ups.

In accordance with Railway Transport Act the allocation authority may establish higher access charges for congested infrastructure under following conditions:

- Allocation authority defines track section as congested;
- IM envisaged this situation and published in NS;
- IM prepares enhancement plan;
- RB approves higher access charge.

By amending Railway Transport Act on 6th November 2015, which implemented Recast Directive, all essential functions (included determination of track access charges) were transposed from Public Agency for Railway Transport to Infrastructure manager. It is still not clear when IM will determine new charging scheme.

Charge	Unit	Differentiation	Cost covered
Access	€/train.km	Line category (7): <ul style="list-style-type: none"> - 3 main lines (G1-G3) - 4 regional lines (R1-R3) 	Costs directly incurred by train operations
Operating	€/train.km	Factor of power car's (3): (A,B,C) Factor of transport type (18): <ul style="list-style-type: none"> - Cargo trains up to 1000 t gross weight - Cargo trains from 1001 to 1500 t gross weight - Cargo trains from 1501 to 1750 t gross weight - Cargo trains from 1751 to 2000 t gross weight - Cargo trains more than 2000 t gross weight - Cargo trains – empty (less than 100 t net weight) - Cargo trains (circular, collecting) - Locomotive trains (empty multiple units, solely running power cars) - Tilting passenger trains - Classic passenger trains <ul style="list-style-type: none"> - Multiple units - Motorail through the Bohinj tunnel - Other motorails - Empty classic passenger trains <ul style="list-style-type: none"> - Heritage trains - Service trains (scheduled maintenance) - Service trains (unscheduled maintenance) <ul style="list-style-type: none"> - Other trains 	
Congestion / Scarcity	€/train.km	(In 2015 no congested lines were declared)	
Late cancellation fees	% of user charge for allocated train path (+25 € for ad-hoc train)	Cancellation: <ul style="list-style-type: none"> - up to 6 hours before scheduled time of departure – FREE - less than 6 hours before scheduled time of departure – 50% of user 	

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	paths)	charge - not cancelled / train does not run – 100%	
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4.17. Spain

In Spain, the chosen charging system is based on a two part tariff (while the fixed part of the fee is very low).

For the rail network, the minimum access package is based on train-kilometres and includes operating charges and reservation charges. According to the new railway law, the reservation charge will provide incentives for efficient use of capacity, foreseeing a penalization for the capacity reserved and not used.

The IM’s cost accounting model is based on a *top down* fully distributed cost, because the main goal of the charging system is full “cost recovery”. However, nowadays, this objective is only feasible for high speed lines due to the operational deficit of the conventional network.

Charge	Unit	Differentiation	Cost covered
Access charge	€/year	Total Annual Train-km running	Administrative costs related to the relationship of the IM with RUs. E.g. the publication of the Network Statement, or the process of network capacity allocation.
Reservation charge	€/ path.km	Period of the day (3) Route category (4) Type of service/train (4)	Fixed cost for operating and maintenance.
Running charge	€/train.km	Route category (4) Type of service/train (4)	Variable cost for operating and maintenance.
Traffic charge	€/seats.km offered	Period of the day (3) Route category (4) Type of service/train (only HST)	Amortization and financial cost

The charges for the minimum package of access services are based on the short-term marginal cost of operation, maintenance and reinvestments and charged according to use per kilometre, gross tonne-kilometre and passages.

The track charge is based on gross tonne-kilometres, and is imposed at varying amounts for both freight traffic and service trains, and for passenger traffic. From 2016 Track charges are levied in different amounts depending on the maximum admissible axle load (STAX) of the train. Trains with a higher STAX thus pay a higher track charge. STAX is an important parameter that reflects the wear and tear that is caused by a train. Differentiated track charges reflect variations in wear and tear between different trains.

The train path charges are levied at three levels. Passage charges are levied in three major cities during rush hours on weekdays. The emissions charge is based on the socioeconomic costs in terms of environmental and health effects. The size of the charge depends partly on the engine's environmental classification and partly on the amount of fuel consumed.

In the case of allocated capacity for train paths cancelled by railway undertakings or traffic organisers, a reservation charge is imposed.

Charge	Unit	Differentiation	Cost covered
Access & Operating Charges (marginal cost)	€/gross tonne.km	Passenger, service or freight traffic	
Track charge	From 2016: Factor 0.9-1.1 depending on maximum axle load	Freight traffic and service trains <22,5 tonne/ 22,5-25 tonne/ > 25 tonne Passenger traffic <20 tonne/>20 tonne	Maintenance, operation and reinvestment cost and socio- economical costs of environmental and health effects
Emission charge	€/litre of diesel fuel	Train type (diesel engine)	
Train path (also marginal cost)	€/train –km	Passenger, freight, service traffic Route categories (high, medium and base)	
Passage charge	per crossing	Freight traffic Öresund link Stockholm, Gothenburg and	Special project
Passage charge	per passage	Malmö during peak hours	Part of fixed cost of infra

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Quality charges	€/minute of additional delay	IM and railway undertakings	
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4.19. Switzerland

This is the Swiss charging system valid from 1st January 2017. The existing scheme of 2016 will be extended by a wear and tear factor by this date.

The charging for the minimum access package covers the standard marginal costs considering the different costs of infrastructure in the network, the demand and the environmental impact of the vehicles. Contribution margins are levied in the passenger transport segments, considering if it is a franchised or non-franchised service.

Note: Switzerland as non-member of the EU hasn't fully adopted the different European Railway reform steps. The legal structure of the Swiss charging system as well as the prices for the minimum access package are defined by State (and not the IM). However the prices for additional services are fixed by the IM.

	<i>Charge</i>	<i>Charging Unit</i>	<i>Differentiation</i>	<i>Cost covered</i>
Variable minimum train-path price	Minimum train-path price	CHF/path km	3 categories of routes on the network	The revenue for each traffic segment should cover the standard marginal costs considering the different costs of infrastructure in the network, the demand and the environmental impact of the vehicles
	Peak-hour demand coefficient	Factor 1 or 2	Factor is applied, when the train-path is used during peak-hours on Mo to Fri between 6.00 to 8.59am and/or 16.00 to 18.59.	
	Train-path quality	4 different factors	The applied factors consider the priority rules for the different traffic segments based in the railway act	
	Stop surcharge	CHF/stop	Surcharge for sections with mixed traffic	
	Basic price by wear	CHF per unit	Differentiation of the various trains on infrastructure in relation to speed, path layout, vehicle type and vehicle design.	
	Basis price by weight	CHF/gross ton kilometre	For historic vehicles. For regional transport segment in 2017 only.	
	Surcharge for trains hauled by combustion-based move	CHF/gross ton kilometre	Trains with thermic traction on electrified lines	
	Dangerous goods surcharge for freight traffic	CHF/axle kilometre	Specific costs arise in connection with the transport of dangerous goods (security or restrictions on operation)	

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	Low-noise bonus for freight traffic	CHF/axle kilometre	For freight vehicles with disk, drum or composite brakes	
	Discount for the ETCS train control system	CHF per year	Granted for vehicles not travelling on specific new lines and brought into service before 1 st January 2013.	
	Discount for traction assisted transalpine freight trains	CHF/powering axle and train-path kilometre	The discount is applied for the entire route travelled with more than four powered axles on the Lötschberg-Simplon and Gotthard-line section	
	Cancellation fee	Factor	Depending on the deadline of cancellation	
	Contribution margin for passenger trains	% of traffic revenues or CHF/kilometre offered	Differentiation between franchise-holders' and non-franchise holders' passenger trains	
	Ex-catenary energy	CHF/kwh x Factor	The „network load factor“ takes account of varying demand and the resulting production costs throughout the day	Price is fixed in the manner, that no uncovered costs arise

4.20. United Kingdom

In the UK, the charging regime for the IM of the national network¹⁶ has been developed to cover the short-run marginal costs of running services on the network. In addition, for the purposes of full cost recovery, train operators pay various fixed charges to cover a proportion of the IM's fixed costs. These charges are recovered as mark-ups. Currently, open access operators do not make contributions towards the IM's fixed costs.

¹⁶ All other infrastructure managers are not considered here.

Charge	Unit	Differentiation	Cost covered
Variable Usage Charge	£ per thousand gross tonne vehicle mile for freight and per vehicle mile for passenger	All services pay this charge but it varies based on the vehicles used and for freight, also the commodity carried.	Covers the maintenance and renewal costs that vary with traffic in terms of the incremental damage the service does to the track, civils and signalling infrastructure
Traction electricity charge	kWh. For services that are not metered, this is modelled per train mile for multiple units, otherwise per kgtm	Operators have option of using modelled consumption rates or metering their use of electricity	Network Rail recovers their costs of providing electricity for traction purposes.
Electrification asset usage charge	£ per vehicle mile (passenger) £ per thousand gross tonne mile (freight)	Applied to all electrically powered services	Recovers maintenance and renewal costs of electrification assets that vary with traffic.
Coal spillage charge	£ per thousand gross tonne miles	Only applicable to freight trains carrying coal	Recovers cost of coal spillage
Capacity charge	£ per train mile	Applied to all types of train operators	Intended to allow Network Rail to recover the performance regime costs that it incurs by allowing additional traffic onto the network
Fixed Track Access Charge	Lump sum charge determined for the control period (5 years)	Applies to passenger services under public service contracts (franchises) only	Determined on basis of Network Rail's revenue requirement after accounting for the income received from variable track access charges, regulated station charges, other single till income and network grant.
Freight only line charge	£ per thousand gross tonne mile	Applies to freight services carrying coal for electricity generators, nuclear fuel or iron ore.	Recovers fixed costs of freight only lines.
Freight specific charge	£ per thousand gross tonne	Applies to freight services carrying coal for electricity generators,	Recovers 'freight avoidable costs' - the costs that would be foregone if freight services were to no longer use the

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	mile	nuclear fuel or iron ore.	
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