



# Bulletin

**OTIF** Organisation intergouvernementale pour les transports internationaux ferroviaires  
Zwischenstaatliche Organisation für den internationalen Eisenbahnverkehr  
Intergovernmental Organisation for International Carriage by Rail

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# EDITORIAL

Dear Readers,

Have you heard of the United Nations Minimata Convention? Did you know that gallium can be used as a replacement for highly dangerous mercury? I was not aware of either of these. Some very readable explanations of the background and the legal consequences for dangerous goods can be found in this issue of the Bulletin.

The article on the sustainability of the railways as a mode of transport is also very topical and is therefore highly recommended for your reading. Are the railways really the most environmentally friendly mode of transport and are they therefore rightly the policy focus in order to achieve the sustainability goals in transport? The article lists numerous arguments why this is indeed the case.

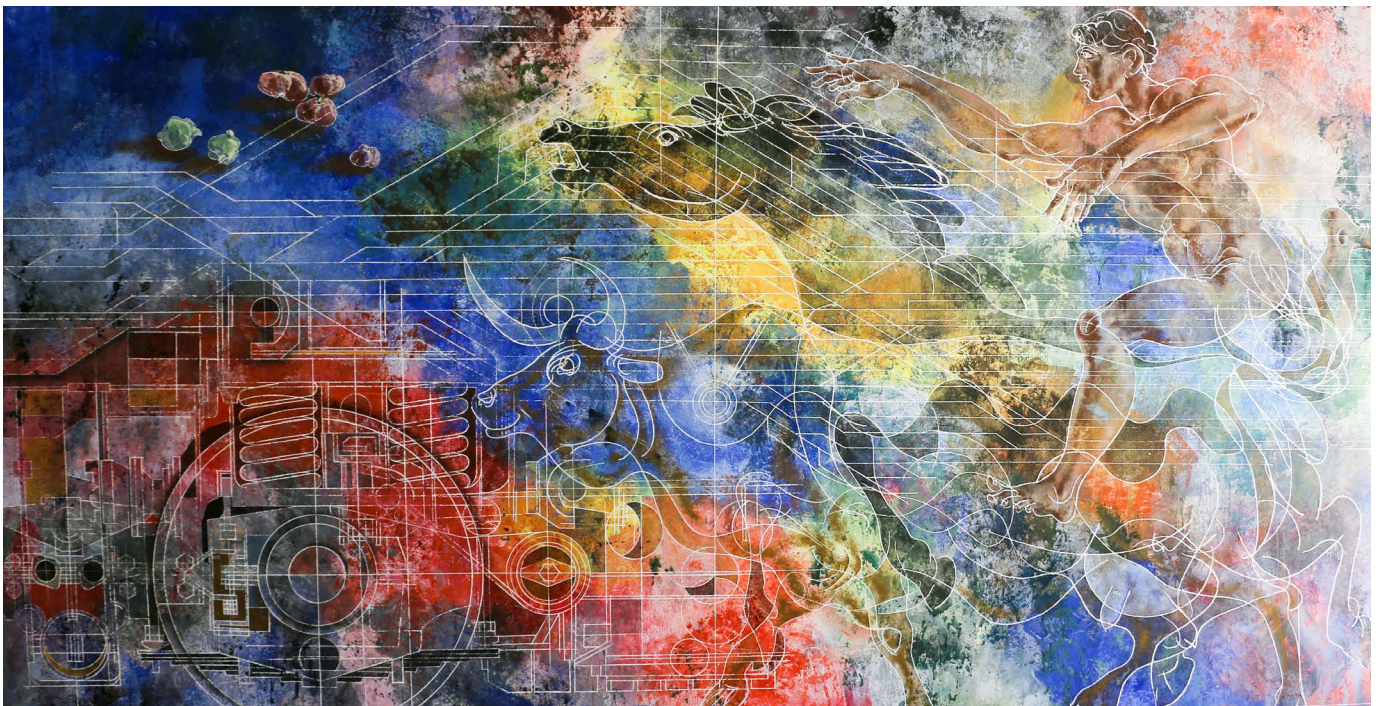
Last but not least, the Bulletin contains an article on a very welcome reference to the Luxembourg Protocol in the Council of Transport Ministers' resolution of 3 June 2021 on rail transport. The Luxembourg Protocol, which unfortunately has not yet entered into force, will play an important role in the financing of railway equipment in the future.

And something else very exciting! On 27 September 2021, the day before the opening of OTIF's 15<sup>th</sup> General Assembly, the "Connecting Europe Express" will stop in Berne, i.e. in the city where the foundation stone for international railway law was laid 125 years ago.

We will report on this important contribution to the European Year of Rail in more detail in a future edition.

I should like to wish you pleasant and, above all, healthy autumn!

**Wolfgang Küpper**  
Secretary General



Hans Erni, mural, approximately 20m<sup>2</sup>, 1965, entrance to the Secretariat

# IN SUPPORT OF HARMONISING RAIL TRANSPORT LAW

On 17 June 2021, the Secretary General of OTIF, Mr Küpper, took part in the Ministerial Conference of the Organisation for Cooperation between Railways (OSJD). The XLIX<sup>th</sup> session of the OSJD Ministerial Conference was held remotely from 15 to 18 June 2021. OTIF was invited as an observer to the plenary session on 17 and 18 June.

OTIF and OSJD have been discussing enhanced cooperation

for some time. In his speech, Mr Küpper explained to the OSJD members his concept of enhanced cooperation between OTIF and OSJD.

The ultimate aim of enhanced cooperation with OSJD is to reduce the negative effects of the fragmentation of railway law and to improve the quality of international railway law. The Secretary General of OTIF called for enhanced cooperation through the creation

of a joint OTIF-OSJD forum, which would examine the specific areas of the two legal systems and make recommendations on harmonisation.

The Secretary General of OTIF warmly thanked the Chairman of the OSJD Committee, Mr Antonowicz, for his invitation and for giving him the opportunity to speak and to further strengthen the relationship between OTIF and OSJD.

## COURTESY MEETING

On Wednesday 30 June, the Secretary General of OTIF, Mr Wolfgang Küpper, met the new Director of Land Transport in the European Commission's Directorate General for Mobility and Transport, Mr Kristian Schmidt.

This was a courtesy meeting held remotely due to the COVID-19 pandemic. Mr Kristian Schmidt has recently been appointed head of

Directorate C "Land Transport" and it was important that he met the Secretary General of OTIF. Mr Küpper and Mr Schmidt discussed the role of OTIF and the close relationship between the European Union and OTIF, which is essential for improving international rail transport.

The Secretary General of OTIF and the Director of Land Transport of

DG Mobility and Transport then discussed some of the highlights of the 15<sup>th</sup> General Assembly of OTIF, which will take place on 28 and 29 September 2021. Mr Küpper welcomed such a meeting and warmly thanked Mr Schmidt for his availability and the quality of the discussion.



## TRIPARTITE WORKING MEETING

The European Union acceded to COTIF in 2011. On 29 September 2020, following an initial administrative arrangement, OTIF signed a tripartite administrative arrangement with the European Commission's Directorate-General for Mobility and Transport and the European Union Agency for Railways.

Renewing an initial agreement, this arrangement has strengthened the close and intense partnership between the European Union and OTIF in the field of technical interoperability and the transport of dangerous goods in particular. Unlike the previous arrangement, the parties have chosen to remove any expiry date.

In the framework of this new

agreement, teams from the OTIF Secretariat met remotely with teams from the EU Agency for Railways and DG Mobility and Transport on 9 July 2021. Various points were discussed:

- From a strictly legal point of view, the participants discussed the implementation of COTIF by the EU and its Member States, the status of approvals of the amendments to COTIF adopted at the 12<sup>th</sup> and 13<sup>th</sup> sessions of the General Assembly, and the future General Assembly of OTIF.
- In the field of technical interoperability, the state of play and possible future cooperation on vehicle registers was discussed in particular.

- With regard to dangerous goods and RID, the participants reported on the progress made by the Joint Expert Group on the coordination and harmonisation of SMGS Annex 2 with RID.

- Lastly, on a broader level, participants reported on their international cooperation with various organisations and on territories beyond the EU.

Another meeting has already been planned.

The close links between OTIF and the EU are being built and strengthened in order to aid smooth and seamless rail traffic.

## WELCOME TO THE SECRETARIAT!

Mr Vitali Hiarlouski joined the OTIF Secretariat on 1 July 2021 as an expert in OTIF's Legal Department.

Mr Hiarlouski has held positions with a strong legal and international dimension in the energy and security sectors. With his recent experience in Brussels within an intergovernmental organisation, a master's degree in public international law and two

specialised master's degrees, Mr Hiarlouski is also multilingual. He has a fluent command of French, English and Russian.

Mr Hiarlouski will carry out a wide range of legal assignments, thus contributing to the development of COTIF in particular. The Legal Department and the Secretariat are pleased to welcome him to OTIF.



## REMINDER

OTIF will hold its 15<sup>th</sup> General Assembly on 28 and 29 September 2021.

The General Assembly is OTIF's

supreme decision-making body (Article 14, COTIF 1999).

At its 15<sup>th</sup> session, it will elect the Secretary General, designate the members of the Administrative

Committee, approve the strategic plan and set the Organisation's maximum amount of expenditure.

# DEPOSITARY NOTIFICATIONS

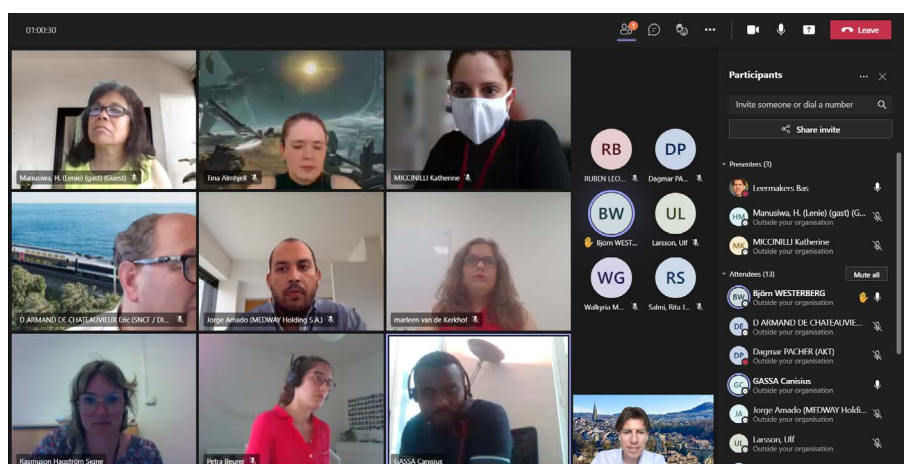
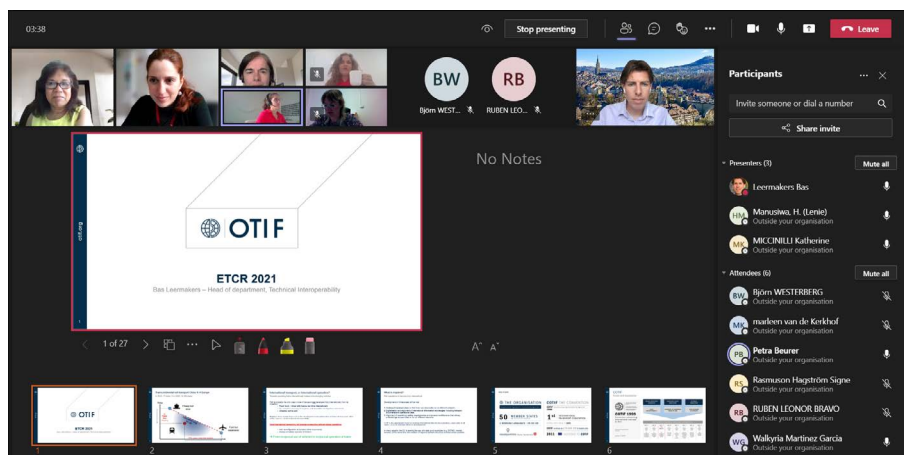
## Since 17 June 2021 ([Bulletin 2/2021](#))

<a href="#">NOT-21014</a>	06.07.2021	Corrections to the edition of RID in force since 1 January 2021 (Annex to Appendix C)
<a href="#">NOT-21008</a>	23.07.2021	Decisions taken by the Committee of Technical Experts at its 13 <sup>th</sup> session held on 22 and 23 June 2021

# OTIF, THE ETCR SEMINAR AND THE COLLEGE OF EUROPE

Since 2013, the Secretariat of the Intergovernmental Organisation for International Carriage by Rail (OTIF) has contributed to the European Training Centre for Railways Seminar (ETCR). This high level, high quality seminar takes place each year at the prestigious College of Europe in Bruges, Belgium.

This year, owing to the pandemic, the seminar was held on line. Mr Bas Leermakers, the head of the OTIF Secretariat's Technical Department, gave a talk and presented the Organisation and the Convention concerning International Carriage by Rail (COTIF). He then took a question and answer round with participants. This course provides a perspective of the European context. Mr Leermakers gives the seminar an international dimension that goes beyond the EU.



# RAIL: THE SUSTAINABLE MODE OF TRANSPORT?

## An inventory of strengths and challenges

Rail is increasingly at the centre of policies aimed at making transport more sustainable. Rail transport, ranging from freight and urban to long distance and high speed, is widely regarded as a sustainable and green mode of transport. This article explores how rail compares to other modes of transport, particularly road transport, and the areas where rail transport could still improve.

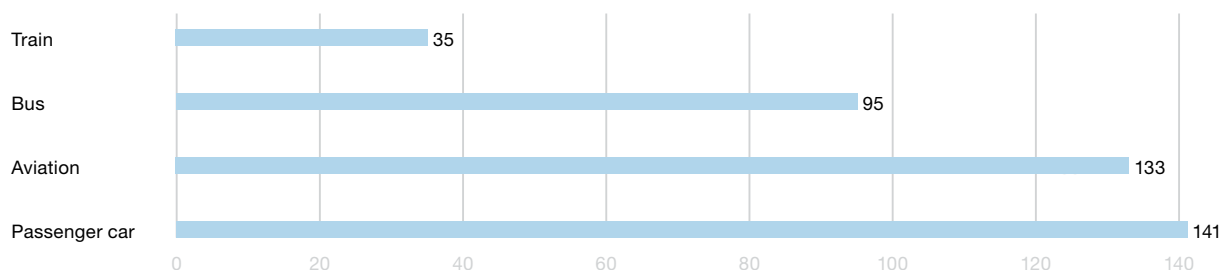
According to a study<sup>1</sup> of March 2021 commissioned by the European Environmental Agency related to transport in the European Union (EU-28) *“Rail and waterborne transport have the lowest emissions per kilometre and unit transported, while aviation and road transport emit significantly more.”* The International Energy Agency states on its website<sup>2</sup> that *“Given the low energy and CO2 intensities of rail transport, promoting rail use is*

*a promising strategy to enhance energy security and reduce emissions.”* The European Union’s Sustainable and Smart Mobility Strategy<sup>3</sup> expresses the ambition to double rail freight and triple high speed rail in the European Union by 2050. 2021 has been designated as the European Year of Rail, to underline the importance of rail transport. Why does rail transport have such a positive image with policy makers?

### Greenhouse gas emissions

Transport policies aim to reduce emissions of CO2 and hazardous exhaust fumes to protect citizens and the environment in general. According to the European Environmental Agency study mentioned above, the grams of CO2 emitted per passenger kilometre across different modes for 2018 are estimated as follows:

### Passenger transport CO2/pkm



These figures are clearly on the side of trains. For the transport of goods,

the estimated differences in grams of CO2 per kilometre are even more

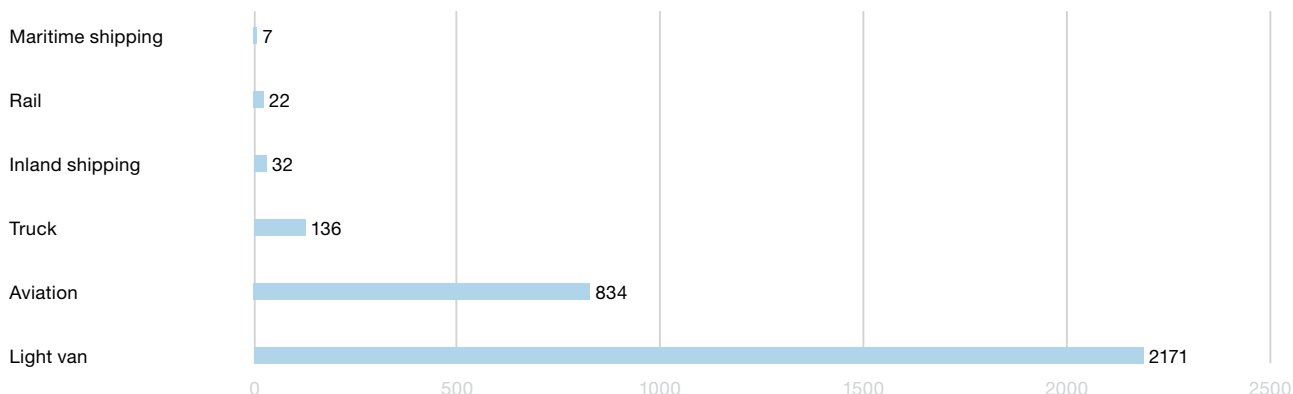
impressive, as illustrated in the following chart.

<sup>1</sup> <https://www.eea.europa.eu/publications/rail-and-waterborne-transport/rail-and-waterborne-best/d3b-eea-ghg-efficiency-indicators/view>

<sup>2</sup> <https://www.iea.org/reports/rail>

<sup>3</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0789>

### Freight transport CO2/tkm

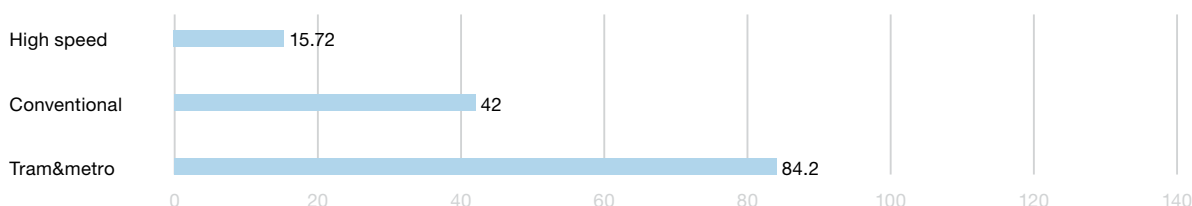


Only maritime shipping has less CO2 emissions than rail transport. However, it should be noted that most goods, most of the time, cannot simply be shifted from one mode to the other. The figures do

however explain why multimodal freight transport, with goods being transported as much as possible by rail or ship, is being promoted. On the basis of figures from the same study, the following chart

illustrates the CO2 emissions of rail passenger transport per passenger-kilometre broken down into high speed, conventional and urban:

### Passenger rail CO2/pkm



There are clear and possibly surprising differences between the types of rail transport. The relatively high CO2 emissions for urban rail are explained by the much more frequent energy-intensive accelerations and stops compared to long distance traffic. Although high speed rail uses more energy per kilometre at its maximum operating speed than conventional trains, the long distance between stations and the higher average occupancy rates make it more efficient overall.

Rail transport in Europe has a high level of electrification; nearly 54%<sup>4</sup> of lines in the EU are electrified. Electrification is usually carried out on lines with high traffic. Although

there are huge differences per country, the share of electrically powered train-kilometres is much higher than the share of diesel-powered train-kilometres. The share of electric versus diesel powered rail transport in the EU is probably in the range of 80:20 (estimate derived from the European Environmental Agency study mentioned above). This means that increasing the share of renewable electrical energy produced by solar, wind and hydro power, instead of coal and gas, will have a direct positive effect on the CO2 emissions of railways. In contrast to rail transport, road transport requires intrinsic and systemic changes to become sustainable by replacing

fuel powered vehicles by electric vehicles and by providing charging stations rather than petrol stations.

### Energy use

Steam-powered railways were invented over 200 years ago to benefit from the low rolling resistance of steel wheels on steel rails, thus limiting the energy needed to carry heavy loads over long distances. The 5 to 10 times lower rolling resistance compared to road transport is still an intrinsic energy benefit of rail transport today.

According to the International Energy Agency, *'Rail is one of the most energy-efficient transport*

<sup>4</sup> <https://uic.org/IMG/pdf/uic-railway-statistics-synopsis-2021.pdf>

*modes, responsible for 9% of global motorised passenger movement and 7% of freight but only 3% of transport energy use<sup>5</sup>.*

Another particular competitive advantage that rail has compared to road is that, due to electrification of infrastructure, electric trains can draw the energy directly from the infrastructure network. In contrast, road vehicles have to carry on-board energy storage in the form of fuel or batteries. With petrol and diesel, carrying energy on board has never been a real issue, as the energy density of petrol (46.4 MJ/kg) and diesel (45.6 MJ/kg) provides a good range at relatively low fuel weight. However, batteries for electric vehicles have an energy density roughly 100 times less than petrol and diesel (0.36-0.9 MJ/kg), which explains why battery packs for cars need to be balanced between range and weight. The low energy density of electric energy storage is partly offset by the fact that electric engines can be four to five times more efficient<sup>6</sup> than combustion engines, so that much less energy needs to be carried for a similar range. Despite this, providing a sufficient range for electric road vehicles at a reasonable weight continues to be a challenge. This is particularly problematic for long distance heavy haulage transport. With a view to overcoming these problems, tests with overhead power lines, just like for railways, are being carried out<sup>7</sup>. Although this may be part of the solution, it will require huge investment to electrify roads on a large scale. Hydrogen fuel cells may provide another solution for heavy goods vehicles of the future, but this will require sustainable high-volume production of hydrogen and the creation of a hydrogen refuelling

network.

Despite its intrinsic advantages, rail transport also has room for improvement in terms of energy efficiency. Trains that make frequent stops, such as urban trains, require most of their energy for their repetitive accelerating. These kinds of trains benefit greatly from light weight construction and from regenerative braking, where the braking energy is stored on-board or fed-back into the system to be reused for acceleration. High speed trains, on the other hand, consume much of their energy on overcoming aerodynamic drag, which increases exponentially with increasing speed. Compared to a train running at 100 km/h, the same train will need four times more energy to overcome aerodynamic drag at 200 km/h and nine times more at 300 km/h. This is why aerodynamic efficiency is very important for high speed trains.

### Capacity and efficiency

Rail transport has huge potential in terms of moving high numbers of passengers or high volumes of goods per hour per square meter of land used. Metro systems in particular are capable of moving over 20,000 passengers per hour<sup>8</sup>. On the other end of the rail spectrum, high speed train lines can move up to 8,000 passengers per hour at speeds of over 300 km/h<sup>9</sup>.

The energy efficiency of rail passenger transport is dominated by the energy consumption of the rolling stock and the occupancy rate. More passengers per train means better performance. The European Environmental Agency notes on its website<sup>10</sup>

that conventional passenger trains are on average 35% full, while the occupancy rate of high-speed trains is generally higher, varying for different countries and connections (e.g. about 80% for the TGV Paris-Lyon, about 50% on average for the German ICE).

For passenger trains, the occupancy rate usually varies over the day. High investments are required to have a sufficient number of trains available for peak hour capacity, leading to over-capacity (empty trains) during off-peak hours. This is problematic, as trains with low occupancy operate at nearly the same costs and energy consumption as a full train, leading to poor performance in terms of cost and energy efficiency per passenger-kilometre.

To optimise train occupancy rates, two types of measures may be effective. Firstly, railway undertakings could create flexibility in terms of coupling and splitting trains during the day, so as to deploy longer trains in peak hours and shorter ones off-peak. Secondly, spreading peak hours and lowering the height of the peaks may also be useful, as this may reduce the required total number of rolling stock vehicles required to meet peak demand. Less rolling stock means lower overall investments and fewer assets to maintain and manage.

### Interoperability

Rail transport competes in international traffic with other modes of transport, i.e. road transport, shipping and aviation. These modes of transport have been either internationally oriented from their inception, or do not have

<sup>5</sup> <https://www.iea.org/fuels-and-technologies/rail>

<sup>6</sup> <https://www.fueleconomy.gov/feg/evtech.shtml>

<sup>7</sup> <https://www.eenewseurope.com/news/e-trucks-overhead-power-lines-be-tested-autobahn>

<sup>8</sup> [http://docs.confibus.org/CE\\_MovilidadUrbana\\_MI-04-16-271-EN-N.pdf](http://docs.confibus.org/CE_MovilidadUrbana_MI-04-16-271-EN-N.pdf)

<sup>9</sup> <https://www.sncf-reseau.com/fr/entreprise/newsroom/sujet/reseau-ligne-paris-lyon-projet-pilote-haute-performance>

<sup>10</sup> <https://www.eea.europa.eu/publications/ENVISSUENo12/page029.html>



the complex interfaces between infrastructure and vehicles that rail has. Rail transport, particularly passenger transport by rail, has mainly been developed and optimised for domestic purposes. Railway companies and states have not (yet) succeeded in creating an interoperable international network like other modes have. A patchwork of different signalling systems, gauges and electrical supply systems has emerged as a result. Goods and passenger transport by car, ship or plane are usually uninterrupted from origin to destination. International transport by rail on the other hand, often still requires reconfiguration of trains at border stations. International traffic by rail is *de facto* often a chain of consecutive domestic operations. This practice is time-consuming and makes rail transport less attractive for customers. In order for rail transport to remain competitive, it is inevitable that national rail systems become more aligned and interconnected so that trains can operate truly internationally. In the 21<sup>st</sup> century, a strong political momentum has resulted in legal requirements, the development of new lines and financial incentives to make railway networks open, interoperable and international.

OTIF is actively engaging in this development by means of the technical and procedural harmonisation brought about by the APTU and ATMF Uniform Rules (Appendices F and G to COTIF) and, in the future, by safety harmonisation in the scope of the EST Uniform Rules (Appendix H to COTIF).

## Noise

The World Health Organisation writes in its Environmental Noise Guidelines<sup>11</sup> for Europe that: “Environmental noise is

an important public health issue, featuring among the top environmental risks to health. It has negative impacts on human health and well-being and is a growing concern among both the general public and policy-makers in Europe.”

In its report Noise in Europe 2014<sup>12</sup>, the European Environment Agency estimates that within the European Union, more than 125 million people (living inside and outside urban areas) could be exposed to road traffic noise above 55 dB L<sub>den</sub>. Railways are the second most dominant source of environmental noise in Europe, with 8 million people exposed to levels above 55 dB L<sub>den</sub> in 2012.

The major contributor to railway noise is rolling noise caused by freight trains. Due to its international character, measures imposed on rail freight at national level have little effect and international rules are required. This is why, since 1 December 2012, all new freight wagons approved for international use in accordance with the ATMF Uniform Rules (Appendix G to COTIF) must comply with the Uniform Technical Prescriptions (UTP) concerning noise (UTP Noise). It is also possible for APTU/ATMF Contracting States to ban the use of old noisy wagons in international use on particular parts of their network. Apart from freight rolling noise, there are rules in the UTP Noise concerning stationary noise and starting noise for both freight and passenger rolling stock.

Further research is ongoing<sup>13</sup> to develop and enhance existing models and simulation to better understand the source of external noise and to help pinpoint the means for reducing it.

Like all other UTPs, the UTP Noise is under regular review to keep it

in line with research results and technological progress.

## Life cycle of rail assets

One often overlooked, but very important aspect of the sustainability of railways compared to road transport, is the long life cycle of rail assets. Rolling stock, for example, is usually designed and built for 30 to 40 years of operational life and in practice may often continue to operate long beyond such a period. This means that not only does the initial investment depreciate over several decades but the environmental impact of the production of new vehicles is also relatively low.

In addition to the long economic and technical life span, most types of rolling stock, such as locomotives and train sets, have a modular build. This allows the mid-life upgrade or replacement of specific parts, such as traction equipment, air compressors, or passenger interior. It is common practice that decades old rolling stock is brought up to modern standards this way, whilst maintaining its basic structure. It is interesting to note that the market for upgrading and renewing rolling stock is a market in which manufacturers of new rolling stock compete with workshops specialising in this kind of work. The COTIF UTPs provide common rules for the construction and conformity assessment of rolling stock. Applying these common rules for new rolling stock and for the renewal and upgrade of existing rolling stock allows for economies of scale and ensures high levels of interoperability and safety.

Similarly, existing (old) rail infrastructure can be upgraded and equipped with new up-to-date traffic management systems to increase the capacity in terms of

<sup>11</sup> [https://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0008/383921/noise-guidelines-eng.pdf](https://www.euro.who.int/__data/assets/pdf_file/0008/383921/noise-guidelines-eng.pdf)

<sup>12</sup> <https://www.eea.europa.eu/publications/noise-in-europe-2014>

<sup>13</sup> <https://cordis.europa.eu/project/id/881791>

train length, speed and trains per hour.

In contrast, road vehicles are not usually upgraded significantly to extend their economic and technical life span. Most vehicles become obsolete after 10 to 20 years and are either scrapped or exported to continue running in other parts of the world. In road transport there is a paradox that modern vehicles must meet stricter exhaust norms than older vehicles, which underpins policies for rapid fleet renewal and shorter service life. Although this may reduce the emission of greenhouse gasses of vehicles on the road, the energy and natural resources required to build new vehicles are detrimental to the environmental objective.

### Safety

Safety may not seem directly linked to transport sustainability, but for the transport of dangerous goods in particular, the level of safety is an important parameter. Accidents may have a significant impact, not only on the lives of those directly involved, but may also generate significant external costs. Road traffic accidents are even considered the biggest source of external costs<sup>14</sup>.

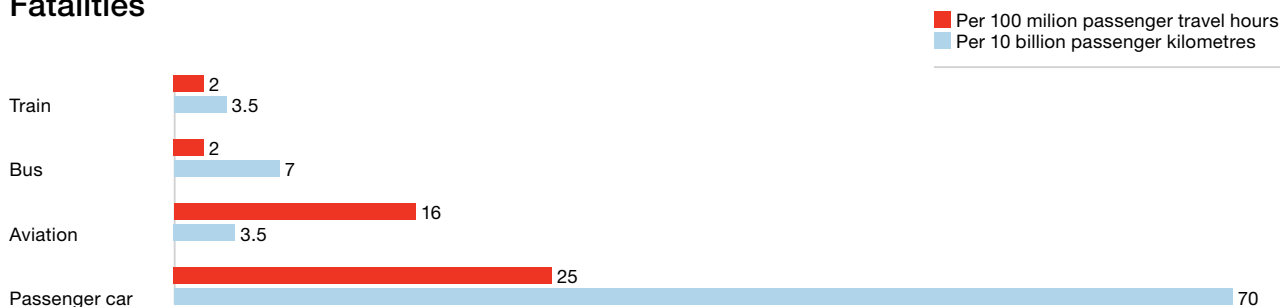
Rail transport is generally considered a very safe mode of transport. Comparing safety statistics between modes is challenging, as much depends on which parameters are being compared. For example, it makes a big difference if accidents and fatalities are measured per

distance travelled, per trip, or per hour.

Aviation, for example, is generally very safe, particularly if measured by distance travelled. Cars do far worse in this respect; during each kilometre travelled by car, the chances of being involved in a fatal accident are about 20 times greater than during each kilometre travelled by plane. If measured per trip, aviation and driving a car are much more comparable in terms of safety. The average trip by plane spans many more kilometres than the average trip by car.

There is some comparable data<sup>15</sup> from 2003 which suggest that road car occupants in particular have a relatively high risk of fatality.

### Fatalities



This chart illustrates why it is hard to compare risks between modes. The relevance of comparing between modes is often limited, particularly when modes are not competing. Comparing the safety of pedestrians with aviation safety is not likely to lead to any helpful insights. Transport safety is monitored mainly as evolution over time within each mode, as is done by Eurostat<sup>16</sup>.

COTIF provides rules which help to maintain and improve the high safety level of rail transport. Firstly, the Regulation concerning the International Carriage of Dangerous Goods by Rail (RID) provides detailed rules for safely packaging,

loading and transporting dangerous substances by rail. Secondly, the UTPs provide requirements for new and upgraded railway vehicles to ensure that they are safely constructed. Thirdly, the ATMF UR provide procedures and requirements for the admission, maintenance and use of rolling stock in international traffic.

### Costs

Rail transport has relatively complex interfaces between the infrastructure and the vehicles moving on it, which explains the relatively high costs for rail

infrastructure and operations. How does it compare to some other modes?

The costs of any transport mode are not all paid by its users. Societal costs related to accidents, air pollution, climate change, noise, congestion, well-to-tank emissions, and habitat damage are not usually fully paid for by the users of the mode. These costs are referred to as external costs.

The infrastructure costs cover the costs for the investment (including depreciation) and financing. By dividing this value by use of the infrastructure, e.g. in

<sup>14</sup> [http://ecocalc-test.ecotransit.org/CE\\_Delft\\_4215\\_External\\_Costs\\_of\\_Transport\\_in\\_Europe\\_def.pdf](http://ecocalc-test.ecotransit.org/CE_Delft_4215_External_Costs_of_Transport_in_Europe_def.pdf)

<sup>15</sup> <https://etsc.eu/transport-safety-performance-in-the-eu-a-statistical-overview/>

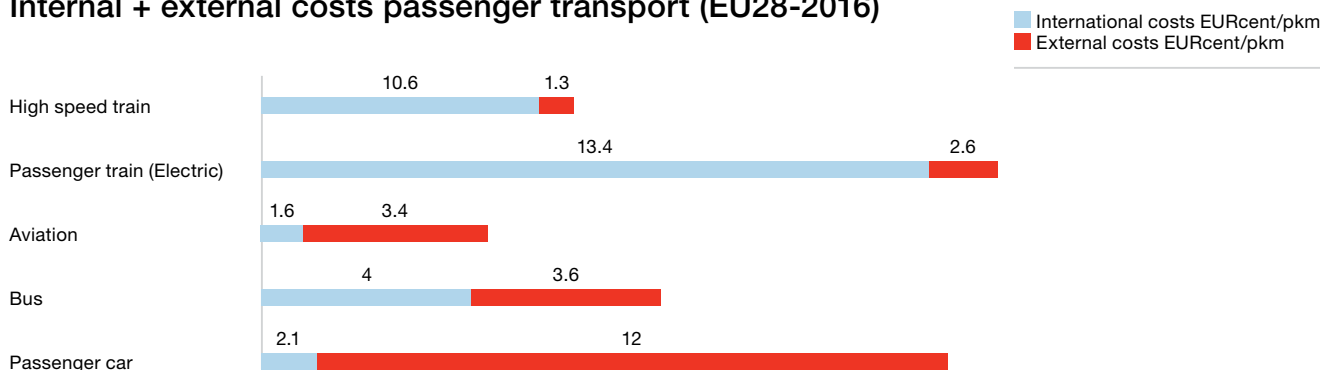
<sup>16</sup> <https://ec.europa.eu/eurostat/web/transport/data/database>

terms of passenger-kilometres, a comparable cost per unit can be derived. These costs are referred to as internal costs.

The European Commission published a study<sup>17</sup> in 2019 which aims at quantifying the external costs and comparing them

between modes. The following chart summarises some of the data from this study.

### Internal + external costs passenger transport (EU28-2016)



This illustrates that a relatively high share of the total costs of passenger rail transport are covered by the internal (infrastructure) costs, particularly when compared to passenger cars. To improve competition between modes, external costs can be internalised, for example by special user charges, such as tolls, so that the transport fees better reflect and cover the external costs to society.

### Attractiveness

If there are different transport modes available for a particular transport need, the customers' choice of a particular mode may depend on many parameters, including accessibility, reliability, frequency, cost, and duration of the journey by each of the competing modes of transport. Rail transport cannot usually offer door-to-door mobility. Therefore, nearly all passenger and goods movements by rail are part of an intermodal transport chain. The attractiveness of rail therefore has a direct link to the availability and efficiency of a

complete door-to-door transport chain.

In recent history, the railways may have considered their main task as 'running trains'. As state monopolies, many state railways were very good at running trains, but perhaps not so good at understanding the transport needs of their freight customers and passengers. However, the focus today is increasingly on providing efficient mobility services to customers. There are good examples of railway companies which, in recent years, have made this transition and have embraced a customer oriented company culture. To force a modal-shift to rail, railway companies will need to support and accompany their customers in their door-to-door transport logistics. Passenger railway companies have a direct interest in safe and efficient urban transport, such as good cycling infrastructure, public bicycles, car sharing programmes, single digital booking/ticketing platforms together with urban public transport operators, timetabling which is

synchronised with other forms of public transport, car parks near stations, etc. Digitalisation creates ample opportunities here.

### Final remarks

This article illustrates that compared to other modes, rail transport overall has a positive profile in this age of environmental awareness. It explains why rail is in the spotlight of policy makers. Each mode of transport is continuously improving; in response to customer demands, through technological progress, or as a result of government policies. Rail transport must continue to innovate in order to maintain the current political momentum. The success of rail transport and its ability to attract new customers may depend much on improving its interoperability, its services to customers and on its ability to take advantage of its complementarity with other modes.

### Bas Leermakers

<sup>17</sup> <https://op.europa.eu/en/publication-detail/-/publication/0efedf2c-a386-11e9-9d01-01aa75ed71a1>

# COMMITTEE OF TECHNICAL EXPERTS' RESULTS AND WORK PROGRAMME

The Committee of Technical Experts (CTE) held its 13<sup>th</sup> session on 22 and 23 June 2021. Due to the COVID-19 pandemic and the remaining travel restrictions, the meeting was held remotely in the form of a video-conference. This article provides a summary of the results of the session, its decisions and work programme for the next two years.

31 OTIF Member States (MSs) were present or represented at the session. The European Union was represented by the European Commission. There were also delegates from the European Union Agency for Railways (ERA), UIC, NB Rail, and CER. The Committee elected the United Kingdom, in the shape of Mr Vaibhav Puri, to chair the session.

The OTIF Secretary General, Mr Wolfgang Küpper, opened the meeting and highlighted the huge task carried out over the past five years that has led to the successful alignment of the technical interoperability provisions of COTIF with the European Union's Fourth Railway Package, by revising the following:

- APTU and ATMF Uniform Rules,
- 10 UTPs,
- Rule for Entities in Charge of Maintenance, and
- Rules for the vehicle registers.

## CTE Rules of Procedure updated

The Committee adopted the modifications to the CTE's Rules of Procedure and decided to apply them with immediate effect. Important modifications to the Rules of Procedure included revised deadlines for publishing documents, thus aligning them with other rules of procedure of other OTIF organs.

## Adoption of new Uniform Technical Prescriptions

The CTE adopted two new Uniform Technical Prescriptions: UTP concerning train composition and route compatibility checks (UTP TCRC) and UTP concerning Infrastructure (UTP INF).

The provisions in UTP TCRC provide a legal environment for the harmonised and correct application of Article 6 § 2 and Article 15 of the ATMF UR, which define responsibilities for railway undertakings in connection with the operation of trains.

The UTP INF sets out the parameters for railway infrastructure that are relevant in terms of compatibility with vehicles and the specific methods for checking these parameters. Contracting States will be able to decide whether or not to apply the UTP INF to particular lines.

## Modifications to existing Uniform Technical Prescriptions

The Uniform Technical Prescription for subsystem rolling stock – locomotives and passenger rolling stock (UTP LOC&PAS) was revised in order to clarify the technical scope and to include new requirements concerning the automatic variable gauge system, eddy current brakes, aerodynamic effects of the on-board energy measuring system, and new optional requirements

for units to be used in general operations (particularly concerns passenger coaches in international traffic). Furthermore, the revised UTP LOC&PAS introduced new rules when existing units and unit types are modified and new rules applicable to the extension of the area of use of passenger vehicles. References to standards and EU legislation were also updated, and specific cases applicable to the Great Britain network of the UK of Great Britain and Northern Ireland, in so far these specific cases are relevant to international traffic, were included. At the moment of entry into force of the new version, the currently applicable UTP LOC&PAS of 1 January 2015 will be repealed.

The revision of the Uniform Technical Prescription for the subsystem rolling stock – freight wagons (UTP WAG) consisted of new rules that apply when existing units or existing unit types are modified, and when the area of use is extended. Specific cases applicable to the Great Britain network of the UK, in so far as international traffic is concerned, were also included. At the moment of entry into force of the new version, the currently applicable UTP WAG of 1 April 2021 will be repealed.

The Uniform Technical Prescription applicable to the accessibility of the rail system for persons with disabilities and persons with reduced mobility (UTP PRM) was revised to a minor extent. The revision included clarification of the technical scope, editorial

modifications, updates of legal references and the inclusion of specific cases applicable to the Great Britain network of the UK, in so far as international traffic is concerned. At the moment of entry into force of the new version, the currently applicable UTP PRM of 1 January 2015 will be repealed.

The final document with legal effect adopted by the Committee was a proposal for modifications to Appendix I of the Uniform Technical Prescriptions concerning telematics applications for freight services (UTP TAF), in the version of 1 June 2020. The modifications were necessary in order to correct errors, take feedback into account, keep up with technical progress and maintain equivalence with specifications applied in the EU. Appendix I, which consists of references to technical documents, is updated on a regular basis; the OTIF Secretariat and ERA have therefore agreed on a process to update the changes efficiently and quickly, bearing in mind the CTE's planning and decision-making process.

### **Request to the Revision Committee to modify the ATMF UR**

The CTE considered proposals for modifications to Articles 3a § 5 and Article 15 § 2 of the ATMF Uniform Rules. The modifications to the text are necessary to reflect the new rules for the certification of Entities in Charge of Maintenance introduced in Annex A of ATMF. The CTE considered that these modifications were urgent, as the texts currently in force might lead to ambiguity or inconsistency with regard to whether or not particular ECMs should be mutually recognised.

Changes to the ATMF UR fall in the competence of the Revision Committee provided for in

Article 17 § 1, letter a) of COTIF and Article 33 § 4, letter g) of COTIF. The CTE therefore requested the Revision Committee to consider these amendments at the earliest possible opportunity.

### **Vehicle registers and access to vehicle-related data**

The OTIF Secretariat presented its analysis of the feasibility of establishing an OTIF/international vehicle register for railway vehicles that are intended for use in international traffic. It included three aspects: political (the will and demand for MSs to have such a register), technical (use of software, complexity of tool, costs and resources), and legal (role of registrar, contractual agreements between OTIF and ERA, MSs). No conclusions could be drawn at the meeting, as there was still a lack of critical information. The CTE requested the Secretary General of OTIF to remind the MSs of their obligations under the specifications for vehicle registers, including the requirement that MS have to notify their registration entity, the location (internet address) of the vehicle register and how eligible users can obtain access to the registered data. The CTE also requested the OTIF Secretariat to publish the notified information on OTIF's website in the form of a list of all vehicle registers, including information on how to contact the registration entity of each MS and how eligible parties can obtain access rights.

### **Monitoring and assessment of implementation of APTU and ATMF UR by OTIF Member States**

The CTE was informed of a Draft Decision on the monitoring and assessment of legal instruments, which was prepared by the Working

Group of Legal Experts. The Draft Decision would be proposed for adoption at the next session of the General Assembly in September 2021. However, the Secretary General requested the organs of OTIF (including the CTE) to apply the Draft Decision provisionally and to share their experience. On this basis, the Secretariat had drafted a strategy, which included a two-step approach, starting with a questionnaire addressed to the Member States. The next step would be for the CTE to involve stakeholders, including assessing entities. The CTE supported the initiative and requested that the OTIF Secretariat, in coordination with the Chair of the CTE and on behalf of the CTE, send the questionnaire to the MSs, allowing them three months to respond, and to present and discuss its findings at the forthcoming meetings of WG TECH and the CTE. This experience would also contribute to the implementation of OTIF's monitoring and assessment policy by other OTIF organs.

### **CTE work programme 2021/2022**

In the context of the OTIF Work Programme for 2020/2021, the OTIF Secretariat proposed the CTE work programme for the next two years. This would include preparations to update specific UTPs and ATMF Annexes and the exploration of further possibilities to facilitate the search and retrieval of vehicle data from the vehicle registers.

Two new activities would also be included: preparations for monitoring and assessing implementation of APTU and ATMF UR by the MSs (as explained above), and the drafting of proposals for Annexes to the new EST UR (Appendix H to COTIF), which deals with the safe operation

of trains in international traffic. The EST Uniform Rules are not yet in force; however, the 13<sup>th</sup> General Assembly in 2018 requested the CTE to start developing the Annexes.

The next session of WGTECH will be

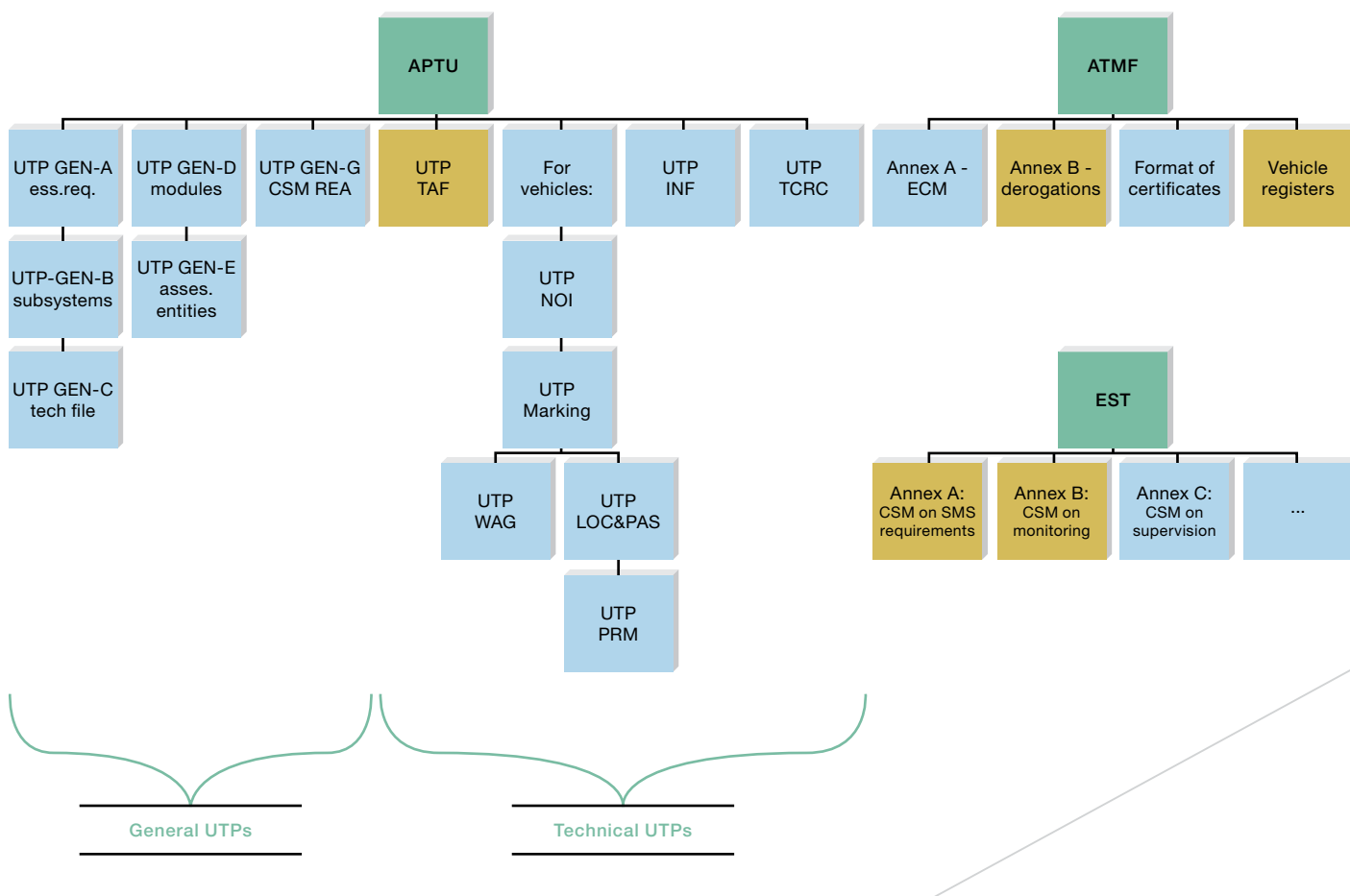
held on 3-4 November 2021 in Bern.

The next session of the CTE (CTE 14) will be held on 14 and 15 June 2022 in Bern.

**Maria Price**

### APTU, ATMF and EST UR and their subsidiary rules

In the competence of the Committee of Technical Experts



# RID/ADR/ADN JOINT MEETING

## Berne, 15 to 19 March 2021

The Joint Meeting of the RID Committee of Experts and the Working Party on the Transport of Dangerous Goods of the United Nations Economic Commission for Europe was able to hold its spring session from 15 to 19 March 2021 as planned. Although this session was initially planned as a hybrid meeting, where both physical and remote participation would have been possible, bearing in mind the general situation with regard to infections and the requirements of the Swiss authorities, the few participants who had decided to attend in person also had to be asked to choose the video option. Once again, a web-based multi-channel platform was used, which had proved its worth at the last Joint Meeting and which enabled discussion in the four working languages (German, English, French and Russian). In contrast to the 2020 autumn meeting, it was possible to hold both the morning and afternoon sessions as official meetings at which formal decisions could be taken.

The discussions, which covered 22 official and 44 informal documents, were attended by 120 delegates from 25 states, the European Commission and the Committee of the Organisation for the Cooperation of Railways (OSJD) and from 14 non-governmental organisations.

### Tanks

As usual, the documents on tank issues were transferred to the working group on tanks for consideration, which also held a video-conference in parallel to the Joint Meeting. 43 experts from 15 states and 8 non-governmental organisations took part in the work of this working group.

### Extra-large tank-containers

At the last Joint Meeting, the question of the pressure resistance of the closures of inspection openings for the internal inspection of tank-containers had remained open. For tank-wagons, these have to be designed for a test pressure of at least 4 bar (RID 6.8.2.2.4). This issue had arisen in the context of the discussions held at the RID Committee of Experts' standing working group on the extra-large tank-containers used in European rail transport, which have a capacity of up to 73,500 litres and a payload of up to 66 tonnes. Following confirmation from two tank-container manufacturers that this provision is already taken into account for conventional tank-containers, it was proposed that this requirement should also be included in RID/ADR for tank-containers.

At the autumn session of the working group on tanks, it was considered that this requirement was not justified for tank-containers for the carriage of powdery substances, because unlike liquid substances, such substances cannot cause large surges. The question was therefore referred back to the RID Committee of Experts' standing working group, which should also examine limiting this to tank-containers with a capacity of more than 40,000 litres.

The working group on tanks provisionally adopted a new text proposal drafted by the standing working group, together with a transitional measure. In this proposed text, the requirement for a test pressure of 4 bar for manhole covers is limited to extra-large tank-containers intended for the carriage of liquids and, where applicable, solids in the molten state.

The working group on tanks supported the development of a specific definition of extra-large tank-containers, but did not feel in a position to develop such a definition during the meeting. However, the view was expressed that not only the capacity but also the maximum gross mass and the external dimensions could be criteria for such a definition.

### Clarification of the provisions for non-destructive testing in RID/ADR 6.8.2.1.23

6.8.2.1.23, which deals with the execution and inspection of welding work, was only applicable to tank manufacturers until the 2019 edition. Since the 2019 edition, it has applied to maintenance and repair workshops. It has emerged that the requirement to perform non-destructive testing using radiography or ultrasound to confirm the quality of weld seams places a disproportionate burden on maintenance and repair workshops, which do not typically perform structural welds of the tank.

The referenced standard EN 12972:2018 (Tanks for transport of dangerous goods – Testing, inspection and marking of metallic tanks) contains provisions dealing with non-destructive testing as part of an extraordinary inspection after repair or modification of a tank, the frame or service equipment or structural equipment. This standard also allows for non-destructive testing other than radiographic or ultrasonic testing.

The Joint Meeting decided to amend 6.8.2.1.23 so that other non-destructive tests may also be used for maintenance and repair workshops, provided they

are approved in a referenced standard. 6.8.2.6.2 extends the application of EN 12972:2018 to the execution and inspection of welding work in the context of repairs or modifications.

### Dry break couplings

In accordance with RID/ADR 6.8.2.2.2, bottom openings for filling or emptying tanks containing a "B" in the third part of their tank code must be equipped with at least three mutually independent closures, mounted in series. These three closures comprise:

- an internal stop-valve, i.e. a stop-valve mounted inside the shell,
- an external stop-valve or an equivalent device, and
- a closing device at the end of each pipe which may be a screw-threaded plug, a blank flange or an equivalent device. This closing device shall be sufficiently tight so that the substance is contained without loss. Measures shall be taken to enable the safe release of pressure in the discharge pipe before the closing device is completely removed.

The position and/or direction of closure of shut-off devices shall be clearly apparent.

At the 2013 autumn session of the Joint Meeting, the Netherlands had already raised the question of whether dry break couplings are permitted as a second closing device, even if the position and/or direction of closure of the shut-off devices is not clearly visible. Dry break couplings are characterised by the fact that the male coupling part on the tank is always closed as long as it is not connected to a matching female coupling part, so that the requirements of RID/ADR can be considered as fulfilled.

At that time, it was agreed that dry break couplings may be used as a second or third closure in bottom filling and discharge pipes. However, no improvement was made to the text of the provision.

The Joint Meeting decided to include a footnote in 6.8.2.2.2 to clarify that dry break couplings are permitted as a second or third closing device and that because of their self-closing property, no open/closed indicator is required.

### Other proposals

#### UN 2426 Ammonium nitrate

The name and description of UN number 2426 is different in the

UN Model Regulations and RID/ADR/ADN. In RID/ADR/ADN, the description limits the scope of UN number 2426 to concentrated solutions of ammonium nitrate "in a concentration of more than 80% but not more than 93%".

In connection with considerations to harmonise the name and description of UN number 2426, it was noted that special provision 252, which is assigned to this substance in both the UN Model Regulations and RID/ADR/ADN, already states that solutions of ammonium nitrate with a concentration of less than 80% are not subject to the requirements.



Examples of dry break couplings (source: informal document INF.29 of the RID/ADR/ADN Joint Meeting in autumn 2013)



With regard to the high est concentration value of 93%, the Joint Meeting decided to include this restriction in special provision 644, which is assigned to this substance in RID/ADR/ADN.

During the discussions, it was also noted that further conditions apply in the IMDG Code. For example, a minimum water content of 7% and a maximum transport temperature of 140°C are prescribed, which in RID/ADR only applies to carriage in RID/ADR tanks. The Joint Meeting decided to submit this issue to the UN Sub-Committee of Experts to decide on common provisions for all modes of transport.

### Special provision 363

For internal combustion engines or machines of UN numbers 3528 to 3530, special provision 363 applies, which combines the conditions of carriage for these UN numbers. Among other things, it regulates those cases in which danger labels or placards are to be affixed, depending on the capacity of the fuel container and the actual fuel content.

In a document, Switzerland had expressed its concern that when internal combustion engines were returned from their place of use, the exact tank content could not be determined and that therefore, even if the limit of 60 litres specified in the special provision was not reached, the removal of danger labels and placards should not be prescribed.

The Joint Meeting adopted by majority the inclusion of a Note allowing the danger labels or placards to remain. However, it was also pointed out that this Note should not be interpreted to mean that labelling, placarding or marking not prescribed in RID/ADR/ADN is only permitted if this is expressly mentioned in the regulations.

### Special provision 593

Special provision 593 applies to eight refrigerated liquefied gases (UN 1913, UN 1951, UN 1963, UN 1970, UN 1977, UN 2591, UN 3136 and UN 3158) which present no hazards other than the risk of asphyxiation. It states that when these gases are used for cooling (e.g. of medical or biological specimens), they need only comply with the requirements of RID/ADR/ADN 5.5.3. However, it also states that these gases must be contained in double wall receptacles which comply with the provisions for open cryogenic receptacles of packing instruction P 203. This requirement is not contained in 5.5.3.

Special provision 593 was introduced into RID/ADR/ADN in 2001 for small quantities of biological products, such as veterinary products, specimens and vaccines or other products that need to be kept at low temperatures in a refrigerated liquefied gas and are to be carried over short distances, as in the case of deliveries to laboratories or veterinary clinics.

5.5.3 applies to the carriage of both dangerous substances and non-dangerous substances and has been included in RID/ADR/ADN because of the asphyxiation effect caused by the refrigerated liquefied gases used for cooling.

The application of special provision 593 then becomes very difficult and may even be impossible if dangerous goods are carried in a refrigerated condition and, in addition to the conditions of packing instruction P 203, conditions of another packing instruction applicable to the dangerous goods being carried must be fulfilled.

The Joint Meeting adopted a proposal from Spain to limit the scope of the partial exemption contained in special provision 593

to the cooling of non-dangerous goods.

### Carriage of pressure receptacles approved by the Department of Transportation (DOT) of the United States of America

High-quality and high-purity gases are produced on both sides of the Atlantic and need to be transported for the specialised industries that require such gases. For decades, problems have existed in the carriage of gas cylinders because the construction and testing requirements for gas containers were not harmonised worldwide.

Even the revision of Chapter 6.2 of the UN Model Regulations, which led to globally uniform requirements for the construction, filling and testing of so-called UN pressure receptacles, could only resolve these problems to a limited extent. These provisions have been incorporated into Chapter 6.2 of RID/ADR and allow UN pressure receptacles to be carried in Europe, irrespective of the country in which these pressure receptacles have been approved. In contrast, however, UN pressure receptacles approved by an RID Contracting State or a Contracting Party to ADR are not accepted for carriage in the United States unless they have also been approved by the United States Department of Transportation.

In the past, the problems that arose in Europe with the carriage of gas cylinders that did not comply with the provisions for RID/ADR pressure receptacles or the provisions for UN pressure receptacles were resolved by means of multilateral special agreements, which had to be extended again and again because of the persistence of the problem, but this contradicted the principle of the five-year maximum period of validity of multilateral special agreements.

In spring 2015, the RID/ADR Member States agreed that the provisions of the multilateral special agreement should only be adopted in RID/ADR if the United States also permitted the carriage of RID/ADR pressure receptacles in the United States Code of Federal Regulations (CFR49) in return. At that time, the representative of the United States of America indicated a possible way of allowing the temporary import of RID/ADR-approved pressure receptacles into the United States of America via an amendment in CFR49, whereby the text could in principle be similar to that of the multilateral special agreements used in Europe. In parallel, similar amendments could be proposed for RID/ADR.

In previous years, the Joint Meeting has constantly been kept informed of the progress of the work and of a possible text of the provision that could appear in both RID/ADR and CFR49. In the meantime, the amendments to CFR49 are available, which allow the import and export of filled RID/ADR pressure receptacles to and from the United States.

The Joint Meeting adopted a new text allowing the import and export of gases in refillable pressure receptacles approved by the United States Department of Transportation. A transitional measure was not deemed necessary, as the current multilateral special agreement is still valid until mid-2023.

The regulations adopted can be seen as a milestone, as now for the first time reference is made in CFR49 to the provisions of RID/ADR and in RID/ADR to the provisions of CFR49.

### Container/vehicle packing certificate

RID/ADR/ADN 5.4.2 provides that if the carriage of dangerous goods

by land in containers precedes a voyage by sea, a container/vehicle packing certificate conforming to section 5.4.2 of the IMDG Code must accompany the transport document. The container/vehicle packing certificate ensures that the operation of packing or loading dangerous goods into the container fully complies with section 5.4.2 of the IMDG Code.

The Netherlands was of the view that the container/vehicle packing certificate cannot be considered as a safety-enhancing measure for the transport of dangerous goods in domestic traffic, as such a certificate is not required if there is no subsequent carriage by sea. It should therefore be sufficient to transmit the certificate electronically directly to the maritime carrier and to dispense with the presence of this document during land transport.

The Joint Meeting decided to amend 5.4.2 so that a container/vehicle packing certificate must be provided to the maritime carrier if land transport precedes carriage by sea. If a standard form is used for the multimodal transport of dangerous goods, the role of the transport document and the container/vehicle packing certificate can be fulfilled by a single document.

### Indication of waste quantities in the transport document

In accordance with 5.4.1.1 (f), the total quantity of each type of dangerous goods must be indicated in the transport document. When carrying waste, in many cases the exact quantity cannot be determined because no weighing facilities are available at the place of loading (e.g. at construction sites, decontamination sites). Various national regulations (e.g. in Germany and Austria), permit an estimate of the weight in such cases.

The Joint Meeting decided to include a new provision in RID/ADR/ADN to allow the quantity of waste to be estimated on the basis of the nominal volume of the packagings or containers containing the waste, under certain conditions. A special note in the transport document that the quantity was only estimated must be discussed again at the next Joint Meeting.

### Carriage of polymerizing substances as waste

A key aspect in the safe carriage of polymerizing substances is sufficient stabilisation by means of chemical stabilisation or temperature control or by a combination of both. This requires knowledge of the self-accelerating polymerization temperature (SAPT), because if the SAPT is less than 50°C (packagings) or 45°C (tanks), the temperature control provisions must be applied and, among other things, the control and emergency temperature must be specified in the transport document. When chemical stabilization is employed, it must be ensured that the level of chemical stabilization is sufficient to prevent dangerous polymerization of the substance, including at a mean loading temperature of 50°C or 45°C. In this case, different factors are to be taken into account, for example the duration of transport or the effectiveness and properties of the stabilizer. This information is in particular available from the manufacturer of such substances, i.e. at the beginning of the transport chain

If polymerizing substances are carried as waste (e.g. during plant closures or site clearances), such information is often missing because, for example, the properties of the polymerizing substances have changed, the substances are overlaid or even partial polymerization has already taken place.

The informal working group on the carriage of dangerous waste held discussions with the waste management industry on how safe transport can nevertheless be ensured in these cases.

The Joint Meeting decided to assign all polymerizing substances, to which special provision 386 is currently assigned in RID/ADR/ADN, another special provision, which relaxes the provisions for substances, provided they are carried for disposal or recycling. Various conditions apply in this case: it must be checked to

ensure that there are no significant deviations between the external temperature of the package and the ambient temperature. Carriage must take place within 24 hours of this test and the ambient temperature during carriage must not exceed 45°C. The packages may have a maximum capacity of 1000 litres.

### **Next session**

The next Joint Meeting will be held in Geneva from 21 September to 1 October 2021.

It will continue its work on the 2023 edition of RID/ADR/ADN. Among other things, it will deal with the harmonisation of RID/ADR/ADN with the 22<sup>nd</sup> revised edition of the UN Recommendations on the Transport of Dangerous Goods, which is being prepared by an ad hoc working group (Geneva, 21-23 April 2021).

**Jochen Conrad**

# FAREWELL TO MERCURY

## Possible contribution of experts on the transport of dangerous goods to implementation of the objectives of the Minamata Convention

In the mid-1950s, a strange disease appeared around the Japanese city of Minamata: people first suffered from headaches, fatigue, attacks of weakness and pain in the limbs, which later led to convulsions, paralysis, psychoses, coma and not infrequently, death. Not only humans were affected: in Minamata Bay, dead fish floated, dead birds fell from the sky and there was talk of "dancing cat fever" when cats behaved very strangely before dying.

Only a government investigation found the reason for the appearance of the strange symptoms. A nearby chemical factory for the production of acetaldehyde regularly discharged methylmercury into the sea, leading to an accumulation of mercury compounds in seaweed and fish, the staple food of the Minamata population. The mercury compounds were used as a catalyst in the production of acetaldehyde, an important source material in the chemical industry. They are harmful to the environment and very toxic to humans and animals, causing damage to the central and peripheral nervous system, liver, kidneys and heart muscles. It is now estimated that about 17,000 people were poisoned by mercury in Minamata and around 3,000 people died.

The Minamata disaster drew the attention of the international community to the dangers of mercury. Because of mercury's ability to bioaccumulate in living organisms, its mobility, its ability to become airborne and its significant

negative impacts on human health and the environment, the hazardous nature of mercury was declared a worldwide problem to be addressed in a global convention.

Against this background, the international community adopted the text of the new Minamata Convention on Mercury in 2013 under the auspices of the United Nations Environment Programme. The Convention entered into force in 2017 and now has 132 States Parties (as of August 2021; see <https://www.mercuryconvention.org/en/parties>). The main objective of the Convention is to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds. This objective is to be achieved through the following measures, among others:

- With regard to mining, new mercury mines are banned and the operation of existing mercury mines is limited to a maximum of 15 years after the entry into force of the Convention.
- States Parties where mercury is used for gold extraction in small-scale gold mines are required to reduce or completely eliminate the use of mercury.
- The manufacture, import or export of products containing mercury for which cost-effective and more environmentally friendly alternatives already exist are either banned or their

permissible mercury content is severely restricted. Such products include, for example, fluorescent lamps containing mercury, batteries, switches, relays, cosmetics, pesticides and measuring devices such as thermometers, barometers and manometers.

- Some manufacturing processes that use mercury, such as chlor-alkali electrolysis using the amalgam process and acetaldehyde production using mercury compounds as a catalyst, will be banned from 2025 at the latest. In other processes, such as the production of vinyl chloride monomer (VCM), sodium or potassium methylate or ethylate, and polyurethane, the use of mercury should at least be greatly reduced.
- To reduce emissions of mercury and mercury compounds into the atmosphere, the industry is required to use the best available techniques and the best environmental practices. Major industrial sources of mercury emissions include coal-fired power plants, waste incineration plants and production facilities for cement clinker and non-ferrous metals.

It is clear from the above that the international community intends to phase out the use of mercury gradually or at least drastically to reduce its use. This "phasing out process" is being accelerated by innovative technologies and by the use of alternative substances.

One of these more environmentally friendly alternatives to mercury is gallium. Gallium is very similar to mercury: it is a silvery-white metal that has a relatively low melting point, which means that many gallium alloys are in a liquid state at room temperature. This property makes gallium an ideal substitute for mercury in the manufacture of various devices and articles. Although gallium, like mercury, is a corrosive substance, unlike mercury it is not toxic. This makes items containing gallium instead of mercury more environmentally friendly and less hazardous. Even in the event of an accidental release of liquid gallium, it would be passivated on contact with the air by forming a dense oxide layer and would not evaporate like mercury and pollute the environment.

Gallium-based products already exist on the market, such as gallium thermometers or gallium UV lamps, which are widely used, especially in Europe and North America. Unlike articles containing 1 kg or less of mercury, which are exempted from the other provisions via UN number 3506 (Mercury contained in manufactured articles) in conjunction with special provision 366, gallium-based products are subject to all the provisions. This makes it more difficult to

transport gallium-based products and thus creates a disadvantage compared to mercury products. This fact contradicts the objectives of the Minamata Convention by discouraging industry from moving forward with the development of such substitute solutions for mercury products.

With this in mind, at the 58<sup>th</sup> session of the UN Sub-Committee of Experts on the Transport of Dangerous Goods (Geneva, 28 June - 2 July 2021), the Chinese delegation requested that, following the example of mercury products, an exemption also be provided for gallium-based products containing no more than 1 kg of gallium. The exemption could be achieved by creating a new UN number for gallium in manufactured articles or a new entry under the existing UN number 2803 for gallium and by simultaneously assigning special provision 366, extended to cover gallium, to this new UN number/entry or by directly assigning the extended special provision 366 to UN number 2803 Gallium.

It should be pointed out that the current special provision 366 for air transport sets out different quantity limits for mercury than for land and sea transport. In

aviation, the content of mercury in exempted articles is limited to 15 g. China proposed to adopt this value in aviation for gallium as well. However, the Chinese delegation also drew attention to the fact that in the International Civil Aviation Organisation (ICAO) Technical Instructions, articles that are not illuminants and that contain no more than 100 mg of gallium are already exempted if the total quantity of gallium in a package does not exceed 1 g.

It is clear that the specific form of the exemption for gallium in manufactured articles in the provisions still requires additional work and will have to be dealt with by the UN Sub-Committee of Experts on the Transport of Dangerous Goods in the next sessions in this biennium. Regardless of which solution the experts choose, it is nevertheless a step in the right direction. In today's world, which is characterised by an increase in international agreements, including in the field of chemicals and waste, it is all the more important that the individual instruments support each other and pursue the same goals.

**Katarina Burkhard**

# "FACILITATE PRIVATE INVESTMENT IN RAIL TRANSPORT!"

## The Luxembourg Protocol as an important building block of the current European transport and railway policy

### Background

The Transport, Telecommunications and Energy Council of the European Union (EU) adopted important conclusions on rail transport on 3 June 2021 under the Portuguese Presidency.

The conclusions are entitled: "Putting Rail at the Forefront of Smart and Sustainable Mobility". They are in turn closely linked to the Communication presented by the European Commission in December 2020 entitled "Sustainable and Smart Mobility Strategy: putting European transport on track for the future".

The EU's goal is to chart a course towards a sustainable, smart and resilient mobility system of the future and to bring about the fundamental changes needed to achieve the goals of the European Green Deal.

The "European Year of Rail 2021" provides a good opportunity to take stock of the various policy and operational initiatives to improve rail services and achieve real modal shift, as well as to reassess the role of rail transport in terms of its resilience during the COVID-19 pandemic and in view of the urgent need for decarbonisation.

The conclusions make important statements on modal shift and European rail passenger and freight traffic and their resilience, and thus on areas that, at least indirectly, also affect OTIF's core tasks,

i.e. ensuring legal and technical interoperability in international rail traffic.

### Importance of investments

Chapter V of the above-mentioned conclusions, which is entitled "Networks, investment and connectivity", addresses the essential role of financial instruments in developing and ensuring a coherent interoperable rail network and its interconnection with other modes of transport (intermodality).

The investments needed to develop rail transport concern both rolling stock and rail infrastructure.

Paragraph 38 of Chapter V deals with investment in rolling stock and mentions possible support for financing at European Union level through guarantees. The urgent need for private sector investment is explicitly recognised.

Member States are reminded in particular that there are international agreements and treaties, including the Luxembourg Protocol to the Cape Town Convention<sup>18</sup>, which aims to facilitate the financing of railway rolling stock by private investors.

As the Council of the European Union points out in its conclusions, a modal shift from carbon-intensive modes of transport to rail is probably the most effective way to

decarbonise the transport sector over large parts of the territory of the EU. Indeed, CO<sub>2</sub> emissions from rail transport are relatively low compared to other means of transport, such as road or air transport.

In particular, the Luxembourg Protocol will make it much easier and cheaper to attract private lenders and lessors to finance rolling stock in the future.

It is important to note in this respect that the Luxembourg Protocol applies to any rolling stock that can move on rights of way or directly on, over or under guide rails, ranging from high-speed trains to trams.

### Special role of the Luxembourg Protocol and OTIF

The explicit reminder in the Council's conclusions of international agreements and treaties and the reference to the important relief function that the Luxembourg Protocol will provide for the private financing of railway rolling stock worldwide are particularly noteworthy from OTIF's point of view.

The COVID-19 pandemic has had a negative impact on the economies of most states, particularly on the transport sector, including rail transport.

By establishing a legal framework

<sup>18</sup> Luxembourg Protocol on matters specific to railway rolling stock to the Convention on International interests in mobile equipment.

for the protection of owners and financiers of equipment, the Luxembourg Protocol will facilitate the financing of rolling stock by the private sector.

The Protocol is expected to enter into force in the Contracting States shortly. The European Union (as far as its competences are concerned), Luxembourg, Sweden and Gabon have ratified the Protocol. At least one more ratification by a signatory state is required for entry into force.

The Protocol will establish a new system for the recognition, prioritisation and enforcement of creditors' and lessors' rights, registered in an international registry based in Luxembourg and accessible to everybody 24/7 via the internet.

According to Article 12 of the

Luxembourg Protocol, OTIF will act as the Secretariat of the Supervisory Authority for the supervision of the future International Registry.

## Conclusion

The special emphasis on facilitating private investment in rail transport in the conclusions of the EU Council and the important role played by the Luxembourg Protocol in this regard is expressly welcomed.

In such a cost-intensive system as the railways, it is important to take advantage of all available sources of funding. States and the economy will not be able to afford to let the additional financing instruments remain unused. Public spending to deal with the COVID-19

pandemic is immense and will be a burden on public budgets for decades to come.

In order to achieve the smart sustainability goals described above, private investment in rail transport will play an important role in the future. The international securities system introduced by the Cape Town Convention can also lead to substantial savings in the rail sector, as has been successfully achieved in air transport.

It is therefore to be hoped that the Council's appeal will not go unheeded and that the states concerned will do their utmost to speed up the ratifications necessary for the Luxembourg Protocol to enter into force.

**Wolfgang Küpper/  
Lunesterline Andriamahatahitry**

## CALENDAR OF OTIF'S MEETINGS IN 2021

DATE	EVENT	ORG	LOCATION
28 - 29 September	15 <sup>th</sup> General Assembly		Berne - Switzerland
3 - 4 November	WG TECH 45		Berne - Switzerland <a href="#">(VIDEO-CONFERENCE)</a>
9 - 10 November	Working Group of Legal Experts; 5 <sup>th</sup> session (Ad hoc Committee on Legal Affairs and International Cooperation; 1 <sup>st</sup> session)		Berne - Switzerland <a href="#">(VIDEO-CONFERENCE)</a>
15 - 19 November	RID Committee of Experts' standing working group (13 <sup>th</sup> session)		Geneva - Switzerland <a href="#">(HYBRID MEETING)</a>

## EVENTS WITH OTIF PARTICIPATION IN 2021

DATE	EVENT	ORG	LOCATION
27 September	Connecting Europe Express/Trans-European Transport Network Train	European Commission, BAV, SBB	Berne - Switzerland
30 September	Connecting Europe Express/ <i>Building a network of European long-distance rail services</i>	European Commission, Germany/ Federal Ministry of Transport and Digital Infrastructure	Belin - Germany
6 - 8 October	12 <sup>th</sup> Transport and Communication Forum	Republic of Turkey/ Ministry of Transport and Infrastructure	Istanbul - Turkey
20 - 21 October	Working Group CIV/SMPS	CIT	Berne - Switzerland <a href="#">(VIDEO-CONFERENCE)</a>
26 - 29 October	OSJD Commission for Transport Law in the field of provisions for the carriage of dangerous goods	OSJD	Warsaw - Poland <a href="#">(VIDEO-CONFERENCE)</a>
3 - 4 November	UIC Group of Experts on the Carriage of Dangerous Goods	UIC	<a href="#">(VIDEO-CONFERENCE)</a>
3 - 5 November	European Rail Safety Days	ERA	Porto - Portugal



## EVENTS WITH OTIF PARTICIPATION IN 2021

DATE	EVENT	ORG	LOCATION
<b>8 - 12 November</b>	Working Party on the Transport of Dangerous Goods (WP.15) (110 <sup>th</sup> session)	UNECE	Geneva - Switzerland
<b>16 - 17 November</b>	Railway Interoperability and Safety Committee (RISC)	European Commission	Brussels - Belgium
<b>17 - 19 November</b>	Working Party on Rail Transport (75 <sup>th</sup> session) (SC. 2)	UNECE	Geneva - Switzerland
<b>29 November - 8 December</b>	UN Sub-Committee of Experts on the Transport of Dangerous Goods (59 <sup>th</sup> session)	UNECE	Geneva - Switzerland
<b>30 - 1 December</b>	UIC Symposium	UIC	<a href="#">(VIDEO-CONFERENCE)</a>
<b>1 - 2 December</b>	CIM Working group	CIT	Berne - Switzerland



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Thank you for your continued interest.  
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