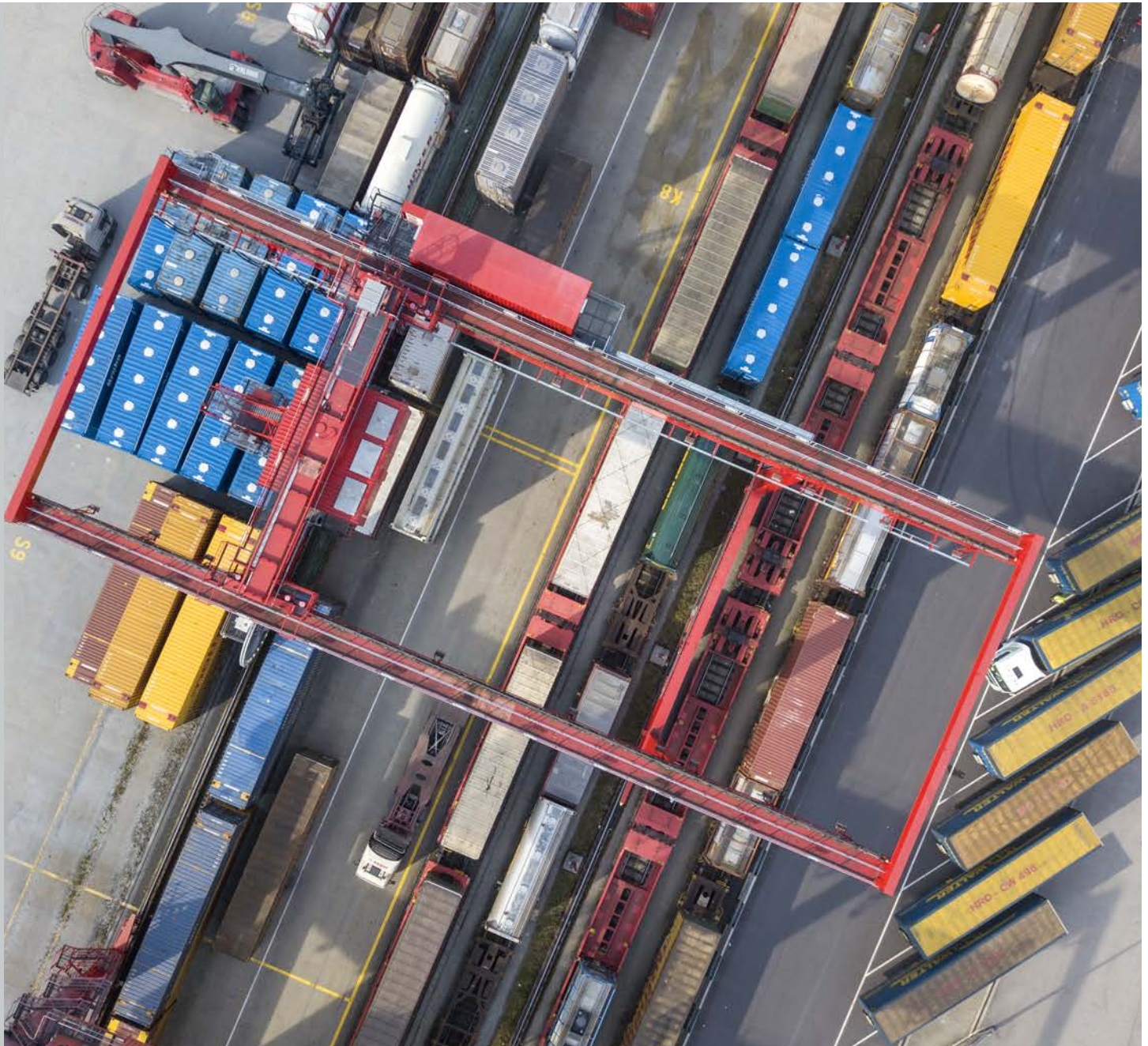


# **Making rail freight more competitive**

The coordinated development of the rail network with a focus on how to work together at the government and sectoral levels on the EATL



# Making rail freight more competitive: the coordinated development of the rail network with a focus on how to work together at the government and sectoral levels on the EATL

Monday 25<sup>th</sup> November 2019, Summary of the Workshop  
73<sup>rd</sup> Session of the Working Party on Rail Transport (SC.2)

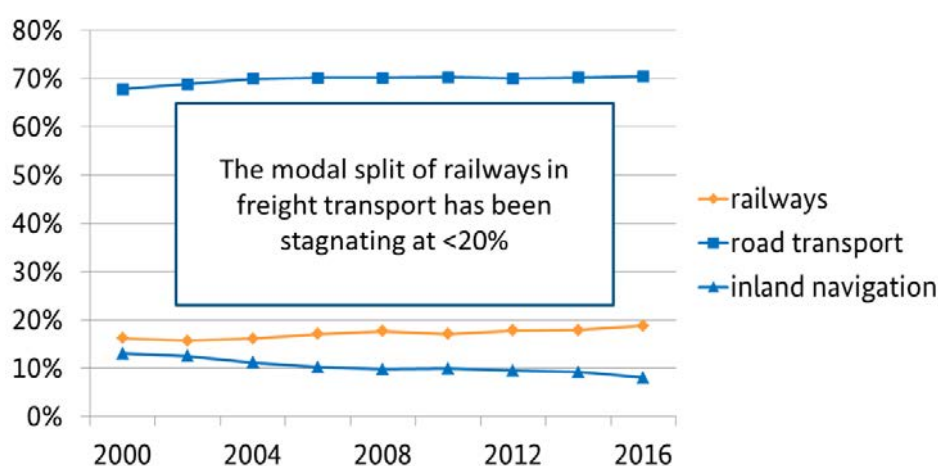
As part of the ongoing activities of the Working Party on Rail Transport (SC.2) a workshop titled “Making rail freight more competitive: the coordinated development of the rail network with a focus on how to work together at the government and sectoral levels on the EATL” was held at its seventy-third session. Over 60 participants from national administrations, international organizations, non-governmental organizations and the private sector discussed, over two sessions, the efforts currently being pursued by the industry to make rail freight more competitive and encourage a shift to rail, in particular for trans-continental movements. This summary document provides an overview of the main discussions,<sup>1</sup> all presentations and interventions from the session are available at on the UNECE website.<sup>2</sup>

## **Session 1: Improving freight competitiveness at the national level**

### **The German rail freight masterplan**

The rail sector in Germany has seen a stable market share of about 20 per cent for the last 20 years (as set out in figure 1 below). As a result, national attention has been focused on ensuring a shift to rail in the coming years with the aim of moving to a market share for rail of 40% through increased competition.

**Figure 1:** Transport market shares - Germany



Source: *Verkehr in Zahlen 2018/2019*, volume 47, Federal Ministry of Transport and Digital Infrastructure

<sup>1</sup> All views expressed by the speakers during the session are exclusively of the speakers and do represent an endorsement of any kind on the part of the United Nations.

<sup>2</sup> <http://www.unece.org/index.php?id=50002> please click on the “workshop” tab



Rail freight remains burdened by low margins and high entry costs compared to the road sector. As a result, Germany has prepared a new masterplan for rail freight to address this disequilibrium. The *Rail Freight Masterplan* brings together a multitude of important stakeholders and is divided into 10 principal actions that are subsequently translated into 66 individual measures aimed at facilitating the growth of rail freight. A main focus is on easing the economic burden on operators by limiting the impact of levies and taxes and by providing high-capacity infrastructure, accompanied by increased electrification, to reduce the environmental impact of the sector. Other key actions are to increase the use of digitalization, automation, and other technological innovations as well as boosting multimodality and reaching a level of interconnectedness that will yield wider benefits.

Short-term measures include the provision of additional public funds to reduce track access charge costs, the development of a 740-metre network, ensuring entrepreneurial involvement in modernizing rail freight, the establishment of procedures and technologies for the digitalization and automation of the marshalling of trains and the preparation of a blueprint for the Federal Government. This blueprint plans to provide a total of €350 million over five years to the sector (though the funding requirement estimated over the period is €1 billion).

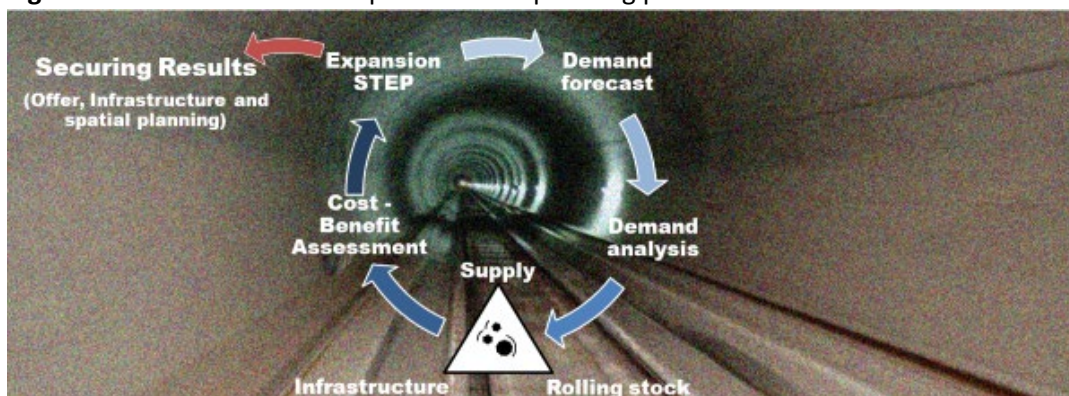
One of the key targeted investments aimed at introducing innovation to increase competitiveness is Digital Automatic Coupling. The digitalization and automation of coupling-decoupling operations, in particular for air, power and data lines between wagons and locomotives, should improve cost effectiveness. For this efficiency to be fully realized, it should also be established at an international level.

### **Rail freight competitiveness in Switzerland**

In 1994, Switzerland adopted an initiative stating that “transalpine goods traffic shall be transported from border to border by rail. [...]”<sup>3</sup>. This policy was aimed at shifting freight movements from road to rail. Since then, Switzerland has upgraded its rail transportation infrastructure through the completion of two tunnels: Lötschberg and Gotthard, in addition to the soon to be completed (2020) Ceneri tunnel, for a total of 24 billion CHF of investments.

Two *Expansion STEPs* (Strategic Enlargement Programs) are planned for 2025 and 2035 accompanied by the release of grants for terminals within Switzerland and bordering countries aimed at improving overall rail freight competitiveness. These STEPs are adaptive and based on national needs as defined by demand forecasts (see Figure 2 below).

**Figure 2:** Rail Infrastructure expansion STEP planning process



Source: Federal Office of Transport - Switzerland

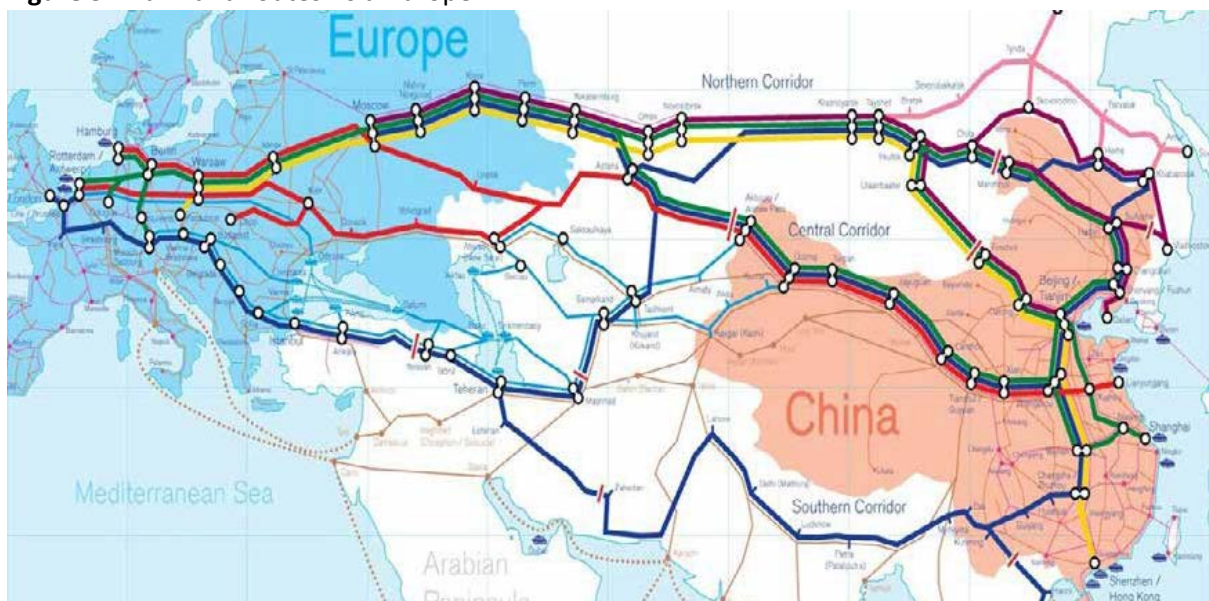
<sup>3</sup> as per Art. 84 Para. 2 of the Federal Constitution of the Swiss Confederation

The most recent Expansion Plan (2025) created a *Network Utilization Concept* which will help to secure investments and anticipate integrating new concepts into the whole network with little disruption. Switzerland places high value on maintaining the fluidity of passenger and freight rail services and thus requires precise short- and long-term planning. These come in the form of specific yearly plans for the period until 2025, to then be replaced by a subsequent plan.

### **The development of rail freight in Poland**

Poland represents a vital and critical spot in the geographical landscape of freight transports as it is the main entry point to the European Union for goods arriving from the Russian Federation, China and Asia in general. Figure 3 below shows the main land routes of flows from Asia to Europe.

**Figure 3:** Main land routes Asia-Europe

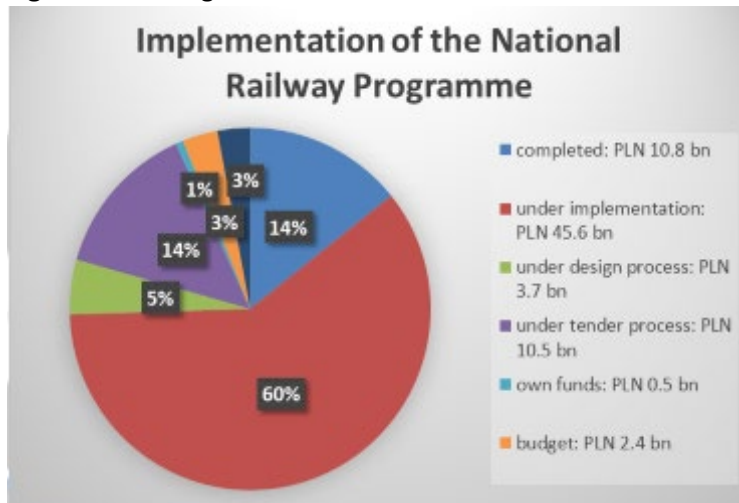


Source: Ministry of Infrastructure - Poland

There are strong differences in infrastructure between Africa, Asia and Europe, and Poland noted that renewed focus on improving global transport corridors especially in relation to the growth in the movement of containers is needed.

Poland is investing significantly in renewing and improving its railway infrastructure to meet its growing capacity needs (324,000 tonne equivalent units [TEU] in 2018). In recent years, over 220 projects have been started in through the National Railway Programme (KPK), amounting to almost €18 billion, upgrading approximately 9000 tracks, installing 2000 km of ERTMS/ETCS signalling equipment and increasing maximum speeds. Figure 4 below shows the allocation of funds within the programme.

**Figure 4:** Funding allocation in Poland



Source: Ministry of Infrastructure - Poland

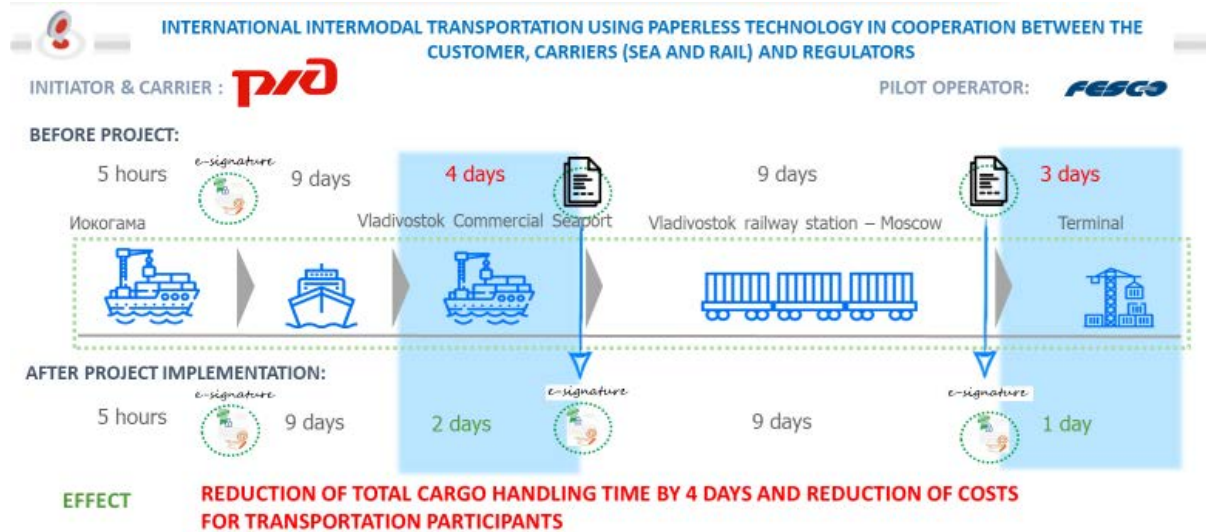
Poland also highlighted intermodality and the role that it plays in ensuring more competitive rail freight. This was shown by intermodal flows through the port of Gdansk.

#### **INTERTRAN: A project of the Asia-Pacific Regional Assembly of the International Union of Railways - Russian Railways, Russian Federation**

Russian Railways (RZD) set out its current role in the transportation of rail by freight by highlighting key statistics including its annual transport of almost 1.3 billion tonnes of freight. As part of its activities it is seeking to increase efficiency by introducing digitization and environmental consideration in all its processes. The INTERTRAN Project started in 2017 as an international rail project, involving the unification and digitization of consignment nodes. The overarching aim of the project is to increase competitiveness in business processes and it is being implemented through three activities: introducing practical measures for the establishment of electronic document flow for intermodal transport; creating a seamless environment for information exchange to ensure electronification of business processes in railway; and increasing the attractiveness of rail-based end-to-end intermodal services for shippers and freight forwarders.

INTERTRAN partners with multiple neighbouring countries (mainly South Korea, China and Japan). In 2019 pilot transportation under the INTERTRAN project was introduced in the Yokohama – Vladivostok – Silikatnaya route with the first Japanese ship docking in Russia and enacting the process. Since then, 33 successful operations have taken place. The efficiency of this system derives from four main points: the use of electronic transit declarations; the use of electronic waybills (paperless technology); the optimization of processing technological operations; and the completion of customs transit procedures in electronic form. Figure 5 shows how this process has managed to reduce cargo handling time by 4 days.

**Figure 5: Pilot transportation under the INTERTRAN project**



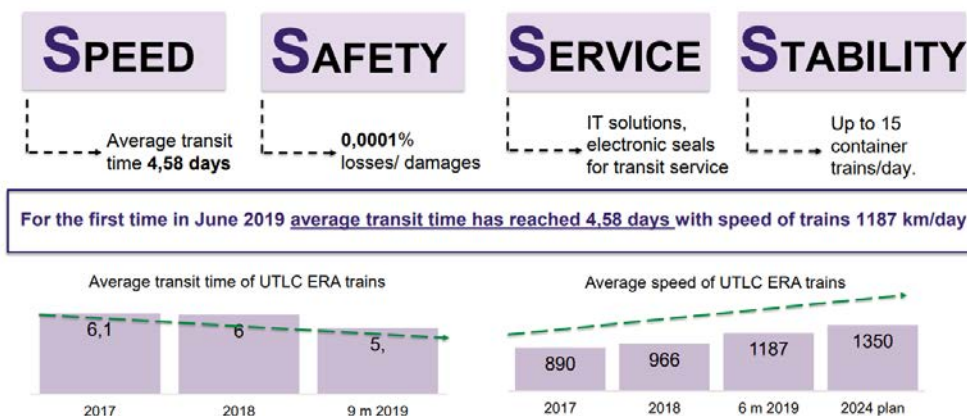
Source: RZD

Bilateral agreements are still the common practice, but Russian Railways envisaged a future where this electronic format or similar ones would be increasingly used in international intermodal transport.

**United Transport and Logistics Company – Eurasian Railway Alliance, Russian Federation**

The Eurasian Railway Alliance is centred on routes that connect these two areas with a focus on the Kazakh-Chinese borders to the Byelorussian-European one. With reference to the INTERTRAN Project detailed by Russian Railways, the United Transport and Logistics Company (UTLC) noted that rail transit from China to Europe had grown six-fold, in just 4 years and underlined the importance of developing this practice in the digitization of consignment notes to foster growth in intermodal transport. With a focus on the 4 “S Factors” - Speed, Safety, Service and Stability, average transit time for UTLC trains has fallen to 4.58 days (see figure below).

**Figure 6: The 4 “S Factors”**



Source: UTLC – European Rail Alliance

This initiative fosters competitiveness by providing simple and transparent services, reducing the time for custom clearance and border checkpoint monitoring. This requires significant international coordination of the monitoring bodies to permit this ease of flow of digitized information across borders. This should be facilitated further through the implementation of *Green Corridors* at customs and the use of electronic information to maximize time savings and competitiveness.



To further increase competitiveness, the UTLC has created an initiative, the Eurasian Rail Alliance Index, to ensure transparency of pricing, analyse different time periods and choose optimal delivery methods for maritime containers in multi-modal transportation by considering infrastructure rates, costs, speed, travel time, seasonality and infrastructure workload.

## **Session 2: Examples of efforts to improve freight competitiveness between Europe and Asia**

### **Efforts to improve competitiveness in Albania, Albanian Railways, Albania.**

The Rail Working Group–Rail Freight Corridors (RWG-RFC) in Albania is working to increase freight transport by rail through strengthening cooperation between the infrastructural managers, studying the balance between freight and passenger modelling and promoting intermodality.

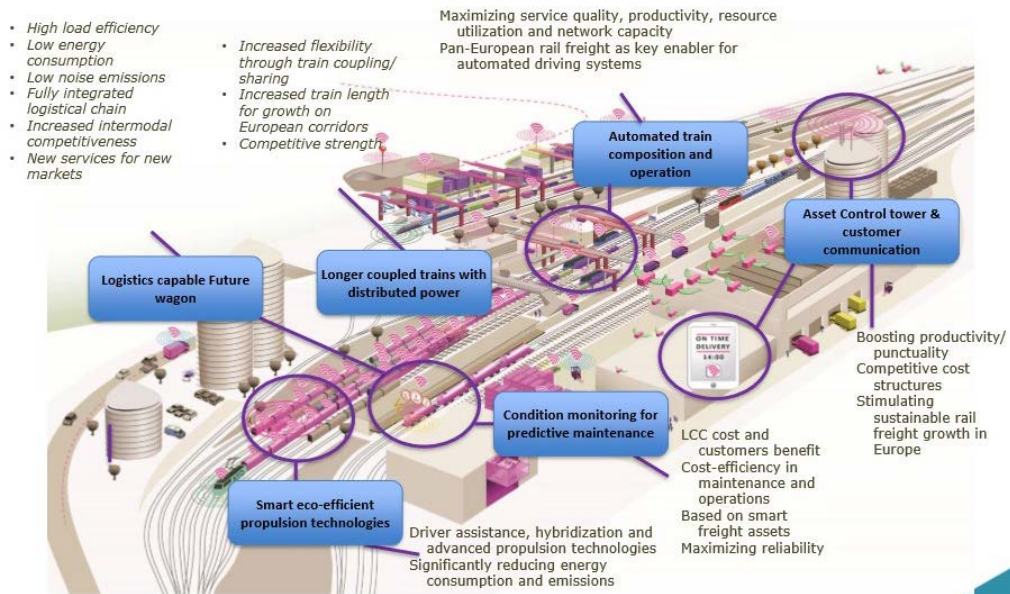
Albanian Railways noted the lack of rail infrastructure in the Western Balkans region, specifically that TEN-T corridors do not cover a large part of the region. However, there are opportunities to improve the Albania's connectivity through extending several Rail Freight Corridors. Possibilities include an extension of RFC 6 through Montenegro and Albania to Greece and/or using the Albanian port of Durres as a rail/sea hub to meet with RFC 3. Another solution identified in order to increase connectivity in the Western Balkans was the utilization of the multimodal centre of Koper (HR), where RFCs 5, 6 and 11 meet and extending these corridors to Albania. Further connections could also be envisaged through RFC 10 in Belgrade and continuing towards the multimodal hubs of Thessaloniki (GR) via RFC 7 through Sofia. This would improve access to Turkey and open up a direct connection with routes to China.

Albania is working closely with its neighbours to increase efficiency and improve intermodality and interconnectivity in the Western Balkans region through the introduction of competition within the Albanian market. Further efforts are also being pursued to harmonize Albanian legislation with EU safety and security requirements. This will create common market conditions and safety standards and promote the liberalization of railway services.

### **Improving freight competitiveness between Europe and Asia: European Union Rail R&I, Shift2Rail Joint Undertaking**

The Shift2Rail Undertaking's vision is: "To deliver through railway research and innovation the capabilities to bring about the most sustainable, cost-efficient, high-performing, time driven, digital and competitive, customer-driven transport mode for Europe." Through this vision, Shift2Rail is pursuing several activities (Innovation Programmes - IPs) and related cross-cutting activities. One important activity (IP5) looks at technologies for sustainable and attractive European rail freight (see figure below).

**Figure 7: Description of Innovation Programme 5: Technologies for Sustainable and Attractive European Rail Freight**



Source: Shift2Rail Undertaking

A focus of IP5 is “time to market”, the time to move from Research and Innovation status to the deployment of such researched technologies. A proper balance between distributed intelligence, or automation and digitization of processes and human supervision should maximize the system’s performance while ensuring that the innovations are translated into on the ground efficiencies as soon as possible. The enablers of such innovations are not only technology-related or mechanical but also in new regulatory concepts and frameworks and strong connectivity. An example of this is the movement to level 2 and 3 automation of freight trains in Switzerland. Innovation remains the key to ensuring a sustainable increase in the competitiveness of rail freight.

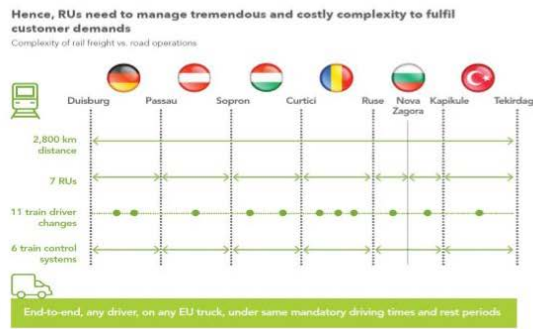
**Making Freight More Competitive, International Union of Railways (UIC)**

The UIC is currently focusing on two main clusters to improve freight rail competitiveness. The first is the RailFreight Forward initiative<sup>4</sup> for 2030, while the second focuses on Asia and the Middle East looking through a “corridor approach”. This corridor approach defines two specific strategic focus areas to boost efficiency and performance, namely interoperability and digitalization. Modal shift and growth can occur by providing services in line with customer demand, such as digitalisation. The UIC noted there must also be a parallel change towards a more international point of view. The rail sector needs to be at the forefront of technological advancements and requirements for it to regain importance in the freight sector.

<sup>4</sup> <https://www.railfreightforward.eu/>



**Figure 8: Solutions for interoperability**



Harmonise operational processes & “Cross border philosophy”

examples:

- Driver language pilots based on predefined messages & digital tools
- Unified braking scheme

Simplified and safe wagon exchange processes

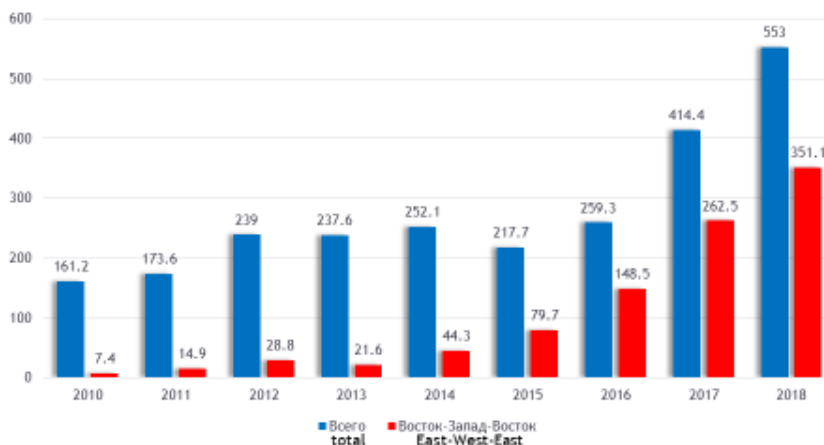
Source: UIC

According to the UIC, two ways to reach this common goal are through the harmonization of operational processes worldwide and a “cross border philosophy”. There should be strategic focus on digitalisation through standardisation and data exchange to foster and enhance productivity and a push for corridor development and process optimisation. In this framework, a study has been prepared for UIC looking specifically at: minimizing the need for temporary speed restrictions; accelerating border crossing, gauge-change and custom formalities (reducing time by 3 hours); reaching 100% usage of the CIM/SMGS consignment note, including e-consignment. Combining these scenarios will bring an increase of 963,000 TEUs by 2030. In contrast to this, the expected decrease in rail subsidies in China is likely to lower the total amount of TEUs by 442,000. Lastly, the UIC presented three different digitalisation projects: the role of blockchain technology in railways, the ESI (Electronic Seal Interoperability) project and the INTERTRAN project (as described in detail by Russian Railways).

**Eurasian Intermodal Carriage by Rail, International Coordinating Council on Trans-Eurasian Transportation (CCTT)**

The CCTT currently focuses its efforts on 5 main working groups, two specialized in improving the competitiveness of North-South and East-West International Corridors, one on the development of Far Eastern Multimodal transportation and the last two concentrating on IT development and the harmonization of international transport laws. Currently the core of its efforts is the development of multimodal container transportation. Its focus is on reducing transit times as the main tool for increasing the competitiveness of freight transport. To accomplish these goals the CCTT has identified three actions: the simplification of customs clearance of transit goods; the introduction of innovative technologies; and the introduction of an electronic document flow.

**Figure 9: Growth of the volumes of container transportation in Russian Federation**



Source: CCTT

Freight movements from China to Europe have grown since 2013 as shown in the figure above. Total containers from Europe to China have increased by 51 per cent, while the number has halved in the opposite direction, yielding an overall average of 34 per cent increase since last year. While some corridors and routes have seen a slump in output, especially via Zabaikalsk (-27 per cent) and via Mongolia (- 9 percent), the East-West route through Kazakhstan has seen a 59 per cent increase. As railway lines are not able to operate at full capacity in some sections, the maritime routes of the Baltic sea from the seaport of Kaliningrad have also been used. The CCTT noted that cutting edge technology must be used to ensure fluidity of movement. Given that security services and custom services are domestically rooted, solutions must be found to reduce border related costs and increase harmonization.

**Efforts to improve freight competitiveness between Europe and Asia, HUPAC Intermodal SA.**

In its focus on using innovations that align with the needs of the sector to increase competitiveness, HUPAC prepared a CHF 280 million 5-year investment plan in 2016 with a digitalisation focus. HUPAC has identified six steps that will facilitate its work with its customers (see figure below).

**Figure 10:** The Six Steps to encourage digital transformation



Source: HUPAC

New digital concepts and solutions have been introduced by HUPAC including the GPS localisation of trains, shown alongside its timetable, as well as the development of a common platform where all this information can navigate and be stored efficiently. All these improvements seek to achieve the goal of 2 million TEUs in transit by 2025, and to reach a market share of 30% in 2030 and 50% in 2050. For this to occur HUPAC noted the need to reduce the barriers to rolling stock homologation and take further steps on infrastructure harmonization.

**RailFreight Forward, Rail Cargo Austria**

The RailFreight Forward project is a coalition of European rail freight companies that are committed to drastically reduce the negative impact of freight transport on the planet and mobility, through innovation and a more intelligent transport mix. Figure 11 below lists the 18 members of the coalition.

Figure 11: Members of RailFreight Forward



Source: Rail Cargo Group – Rail Cargo Austria

Rail Cargo Austria noted that 10 per cent of total CO<sub>2</sub> emission come from freight transport, 75 per cent of which is from the road sector. On average, drivers lose around 120 hours each year on average due to traffic. This results in inefficient transport of freight in addition to other negative externalities from road traffic like road related fatalities and reduced air quality. In order to achieve the Paris agreement targets by 2030, there must be a shift towards sustainable freight. Rail Cargo Austria explained that rail is more favourable than road in terms of energy efficiency, CO<sub>2</sub> emissions and air pollution.

In order to reach a modal share of 30 per cent share by 2030, Rail Cargo Austria identified cooperation as most important to create a sustainable logistical backbone for European industry whilst also connecting the continents. This needs to be considered in the framework of multimodality through three distinct but interrelated pillars: (1) Putting customers at the centre of the activities of railway undertakings and offering superior products; (2) Facilitating access to infrastructure for freight movements; and (3) Ensuring that the focus of national authorities is on supporting and developing rail freight and reducing its competitive disadvantage to road freight transport. Rail Cargo Austria highlighted the importance that these pillars work together.

### **Implementation of railway reforms in Azerbaijan, Azerbaijan Railway**

Azerbaijan holds a strategic geographic position in East-West and North-South corridors between Europe and Asia. In 2018, international transit traffic made up almost 40 per cent of all flows. Currently, the network of ADY is 60 per cent electrified and 40 per cent double-tracked, and there are currently three infrastructure projects ongoing for the improvement of both cargo and passenger services.

Azerbaijan Railways (ADY) noted the reforms it has undertaken over the past five years with the aim of modernizing the railways and making them more attractive. The figure below sets out the five main strategic goals, the vision and mission for the company and relevant subsidiaries going forward.



**Figure 12: Azerbaijan Railways' strategic goals**



Source: ADY

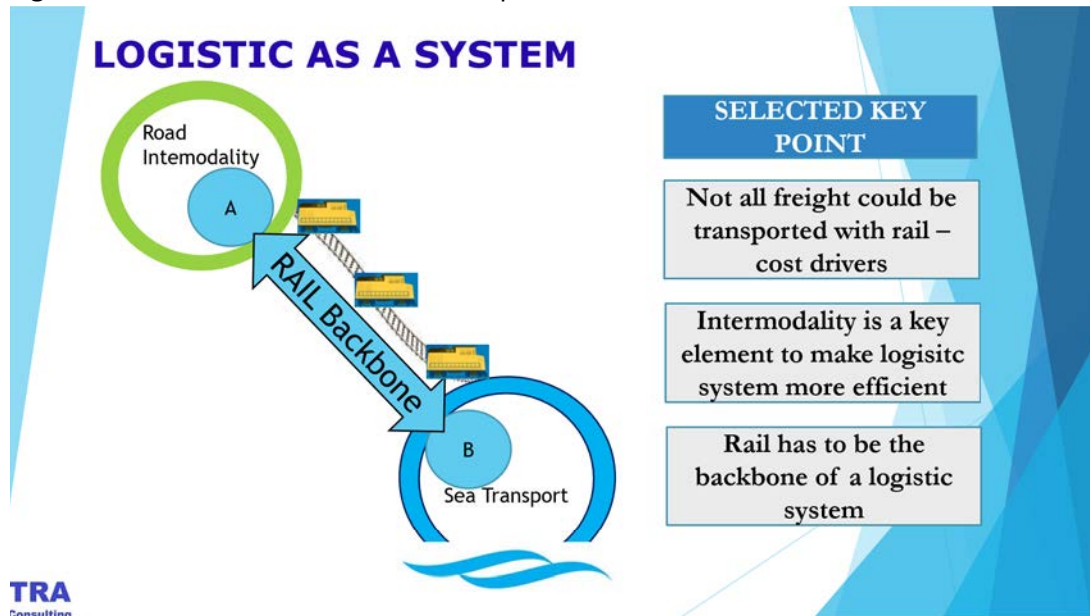
As a key driver to the reform process, in December 2017, Azerbaijan Government launched its Railway Sector Development Program. Aiming for performance, institutional, financial and human resource reform actions, it has been developed with the requirement to undertake a total of 45 reform actions. The first phase of reforms included debt restructuring, the introduction of an internal audit system and the creation of a dedicated unit for the reform process. The second phase focused on preparing and submitting railway laws to the government and corporate restructuring, establishing risk management and asset management systems etc. Currently, ADY is negotiating with the government to obtain subsidies to improve its competitiveness and to create a return on investment and to put it on an equal footing with road transport.

**Global trends in rail freight competitiveness, TRA Consulting**

Analysis from TRA Consulting shows how a large amount of trade originates in the Asian-Pacific region and that for the East-West route between China and Europe, 94 per cent of the trade volume is transported by sea. However, as several studies have shown, rail transport is on average 21 days faster than sea, produces 90 per cent less CO<sub>2</sub> emissions, and is six times cheaper than air freight. Rail remains at a competitive disadvantage because of logistics costs associated with the movement of goods. Transport itself accounts for about 44% of total logistics costs while warehousing and inventory make up most of the remainder along with complicated border crossing procedures outside the European Union.

While TRA Consulting explained that rail needs to be the backbone of freight movements, it cannot work in isolation. Intermodality will be a key aspect of future rail growth as shown in the figure below.

**Figure 13:** The future of intermodal transports



Source: TRA Consulting

Furthermore, TRA Consulting noted that attention needs to be placed on infrastructure improvements with the removal of restrictions and bottlenecks a priority. A coordinated European vision that allows for such measures to be implemented should be coupled with increased competition in the market in order to reduce costs through the creation of a real single European railway area. Such coordination will help reduce costs through other measures such as the creation of a common operational language.

## **Summary**

Several common themes were identified in the various interventions during the workshop. These include:

- Ensuring that technology and innovation are drivers for increased freight competitiveness
- Seeking to ensure a level playing field with road transport
- The importance of reducing infrastructure deficiencies whether they are at border crossing, at bottlenecks in the network or as a result of poorly maintained infrastructure
- That member States should coordinate together at a Pan-European level to ensure that common objectives related to increasing the market share of rail freight stimulate increased competitiveness.
- That coordination at the operator level (subject to competition law constraints) should also be encouraged to capture available synergies.

All these main principles are topics of continued discussion at the Working Party on Rail Transport (SC.2) and delegates at the workshop reiterated their support for these issues to continue to be addressed in working party sessions, in line with the contents of the new Inland Transport Committee Strategy until 2030, for the further development of the railways.

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As part of the ongoing activities of the Working Party on Rail Transport (SC.2) a workshop titled "Making rail freight more competitive: the coordinated development of the rail network with a focus on how to work together at the government and sectoral levels on the EATL" was held at its seventy-third session. Over two sessions, the efforts currently being pursued by the industry to make rail freight more competitive and encourage a shift to rail, in particular for trans-continental movements were discussed and assessed. This summary document provides an overview of the main discussions.

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