Learning Materials on

Railway Transport

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The learning materials were developed for capacity building activities to strengthen subregional connectivity in East and North-East Asia through effective economic corridor management. ESCAP East and North-East Asia Office worked with Mr. Goran Andreev under the supervision of Mr. Sandeep Raj Jain, Economic Affairs Officer, Transport Connectivity and Logistics Section (TCLS), ESCAP Transport Division in developing the learning materials.

Disclaimer

Objectives and Content

The overall objective of the training is to provide introduction on emerging trends in international railway transport and to highlight the potential for facilitation of border crossing by rail. It aims to provide a strong understanding of the concepts of electronic information exchange and use of new technologies for increased efficiency and security in organization border crossing activities. The module will discuss legal, technical and operational aspects of international railway transport and related border controls, including options for coordination on corridor level.

The training aims to expand the understanding on the main elements of international railway transport:

- Emerging trends in international railway transport (sustainability, international connectivity, overall logistics solutions, reliability and resilience)
- Enhancing interoperability for facilitation of international railway transport
- Electronic information exchange for facilitation of border crossing by rail (between railways and among railways and control authorities, Case study example)
- Use of new technologies for efficient and secure border crossing by rail
- Facilitation of Customs transit procedures for international railway transport (use of railway consignment note as a Customs document, existing practices and potential for development of new international Customs transit arrangement for railway transport)
- Joint border controls and opportunities to streamline border crossing by rail (coordination between railways and control authorities, use of single window facilities, and single stop inspections)
- Corridor management mechanism for railway transport (existing experiences and key issues to be and addressed)

Learning Outcomes

After completing this training module and having consulted the recommended and reference readings, you will be able to:

- Understand the emerging trends in international railway transport and the potential for railway transport facilitation based on enhanced interoperability
- Recognize the importance of digitalization and electronic information exchange for facilitation of border crossing by rail
- Comprehend solutions for use of new technologies and organization of joint controls to streamline border crossing activities
- Recognize the requirements of Customs transit procedures and possibility for introduction of new international railway Customs transit arrangement(s) based on unified railway consignment note
- Corelate key issues for facilitation of international railway transport with options for coordination on corridor level.

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CONTENTS

1 Emerging trends in international railway transport

Each international railway corridor has its own specific characteristics with regard to the configuration and operational readiness. Despite existing divergence, similar drivers shape the development of railway transport (e.g. continued economic development and growth of regional/global trade; competitiveness in relation to other modes of transport; employment of new solutions based on technological advancements, regulatory reforms etc.). Identification of changes and factors that will impact the railway transport environment and demand is a complex endeavor, which requires to consider the key emerging trends in international railway transport, in addition to the specific corridor/national characteristics.

1.1 Railways as a part of sustainable economy

With estimated significant growth of demand for transport in future, and in order to support development of sustainable economy, it becomes imperative for policymakers to address the adverse effects of transport. Transport and logistics account for a significant portion of total energy use (in many countries upward of 40%) and a correspondingly large share of carbon dioxide (CO2) emissions. Some estimates indicate that while railways account for about 8% of passenger transport activity, and 28% of surface freight transport activity, the railway transport is producing only about 3% of global transport CO2 emissions (SLoCaT, Transport and Climate Change Global Status Report, 2018). With the negative externalities becoming so evident, more environmentally friendly modes of transport, such as railway, are receiving increased attention.

Box 1 **Sustainability advantages of railway transport in comparison to road transport**

- 6 times lower specific energy consumption (due to physical characteristic and electrification)
- 85 times lower external costs related to traffic accidents
- 6-9 times lower CO2 emissions
- 6 times lower overall external costs per 1,000 ton-km (7.9 EUR vs. 50.5 EUR for road transport)

(Source: Rail Freight Forward, White paper: 30 by 2030 - Rail freight strategy to boost modal shift, 2018)

Even though the railway transport has much lower external costs if compared with road transport that is not reflected by the transport prices, and the railways are put at disadvantage because many of higher external costs relevant to road transport (e.g. related to safety, accidents, climate change, pollution) are effectively borne by the society.

Many countries are developing policies regarding railways as a part of sustainable economy that are not only focused on reduction of CO_2 emissions but equally considering the economic, social and overall sustainable dimension from development of the railway transport, which have resulted in:

a) shift-to-rail initiatives, (determined by the available railway infrastructure and focused on smart and client-oriented railway solutions, which improve cost-effectives and competitiveness of railway transport operations through innovation);

b) development and application of green technologies;

c) new financial instruments used for financing of railway projects.

Read	Learn more about European **Shift2Rail** framework formally established as a PPP that includes over 80 projects launched over last 5 years, aimed at better coordination of research and innovation in rail sector(https://shift2rail.org/).
Watch	**Rail Freight Forward video** advocating reduction of negative effects of mobility and freight traffic(https://youtu.be/6l-RsjSiqo0).
Note	Please share your views on the following: • What are the policies of Mongolia with regard to railways as a part of sustainable economy? • Could you briefly describe some related initiatives/projects already launched? • What are the lessons learned from such projects?

1.2 Railways as a basis for international connectivity

The connectivity could be observed as a set of interconnected nodes in the network and it could be evaluated based on how well any node is connected to all other nodes in the network. Two interlinked dimensions of international railway connectivity include:

- "hard" part represented as physical (infrastructural) connectivity, which could be achieved via construction of new railway infrastructure and projects for upgrade of existing infrastructure (this part is not addressed within this training module), and
- "soft" part represented as operational connectivity, which includes access to railway services, interoperability, and facilitation of cross-border railway operations and regulatory controls of border crossing agencies (e.g. Customs, border control, sanitary and quarantine agencies).

There are many international and bilateral instruments which are enabling and creating more favorable environment for increased connectivity. Some of them are focused exclusively on railway transport, and some are more general and include relevant policies for railway transport. The number of countries participating in international connectivity initiatives is continuously growing creating more favourable environment for realization of coherent connectivity policies.

Box 2 **Examples of instruments and initiatives that support international connectivity**

- Intergovernmental Agreement on the Trans-Asian Railway Network (2009)
- Belt and Road Initiative (launched by China in 2013)
- Eurasian Economic Union (EAEU) coordinated (agreed) transport policies
- Program of China-Mongolia-Russia Economic Corridor (June 2016)
- Bilateral railway transport / transit agreements (Mongolia – China / Mongolia – Russian Federation)
- International Convention on the Harmonization of Frontier Controls of Goods (1982) (Annex 9 on
- Facilitation of border crossing procedures for international rail freight)
- WCO Revised Kyoto Convention (1999)

Some of the key issues related to operational connectivity are interoperability, including e-interoperability, and facilitation of border crossing procedures. National authorities and railway companies have intensified their efforts to assure faster procedures by removing existing so-called soft constraints. Key issues under development are international information exchange, Customs - railways electronic interactions; pre-arrival information; simplified customs and control procedures.

1.3 Railways as a part of overall logistics solutions

One of the most important change required pertaining to rail freight transport, is to establish its role as part of the overall logistics solution. Assured traditional markets led railways to focus more on building infrastructure than on understanding changing of markets and customer requirements. Focus on operational efficiency and a holistic view of the supply chain from the perspective of various stakeholders, such as shippers, freight forwarders and third-party logistics providers can lead to railway freight transport being perceived and used as a part of the total logistics solutions.

Addressing inefficiencies of fragmented networks could lead to reduced overall transport cost from origin to destination. Integrated planning and investment in freight transport infrastructure could reduce inefficiencies that have contributed to increased logistics costs. That could support increased use of railway

transport for the rising demand for freight transport and changing production patterns. The railways would immensely benefit from building strategic partnerships with key shippers, freight forwarders and third-party logistics providers, either through affiliated companies or by forging other mutually acceptable arrangements. Analysis of the logistics chain and understanding of how railways could offer door-to-door solutions could open a wide range of opportunities for the railways in the region.

1.4 Reliability and resilience of railways

The reliability of railway operations is considered as key element for increasing the competitiveness of railways. Over the recent years numerous studies and initiatives were aimed at finding the solutions to increase the reliability. Two aspects of reliability are being addressed: physical reliability of infrastructure and operations, as well as non-physical reliability of shipments.

Table 1: Physical and non-physical reliability solutions

Physical reliability	Non-physical reliability
• shift from traditional maintenance to predictive maintenance; • automation of mainline and shunting operations, including driving; • use of new digital tools for data-driven operations and maintenance: sensors, e-seals, drones, etc.	• calculation of estimated time of arrival (ETA) with improved accuracy (e.g. use of artificial intelligence (AI)); • e-data exchange, including pre-arrival exchange; • construction of trusted digital ecosystems for transportation and cargo data sharing

The resilience of railways was confirmed in dealing with COVID-19 pandemic when many countries around the globe had to slowdown economic activities and close the borders. The COVID-19 crisis adversely disrupted international transport connectivity and logistics supply chain networks combining economic crisis with global health emergency. However, most of the railways managed to preserve or quicky restore their freight services despite numerous restrictions and challenges. This crisis opened some opportunities in particular for railway freight transportation (e.g. due to less restrictions at border crossings; higher demand for fast railway services for under-shipment of goods, medical goods etc.).

The impact of the COVID-19 pandemic will most probably be long-lasting and railways should consider reflecting the relevant changes on strategic level and with implementation of specific solutions and technologies such as: higher predictability and reliability; less dependence on human factor (e.g. with further digitalization and automation) and less physical interaction; need for further intensive harmonization of

border-crossing issues (to avoid different rules, asynchronous actions); need for establishment of strong cross-border links and information interchange.

2 Enhancing interoperability for facilitation of international railway transport

Efficiency of international railway transport along the international railway corridors depends on the level of interoperability between the sections that are running on individual national railway networks. Achieving highest possible extent of interoperability could create well-connected railways corridor and enable seamless movement from origin to destination with minimal interruptions when crossing from one country to another. The railway interoperability could be analyzed on three layers: technical, legal and operational that are closely interconnected.

2.1 Technical interoperability

Technical interoperability refers to technical characteristics of railway infrastructure and rolling stock. That includes track gauge, structure and loading gauge, maximum axle load, train length, signaling and telecommunication systems, rolling stock technical specifications, etc. Enhanced technical interoperability may enable superior physical connectivity; however, in order to justify the investments needed it is necessary to consider the operational effects that could be achieved.

Lack of interoperability due to existence of different track gauge (e.g. 1,520 mm and 1,435 mm gauge) prevents continued movement of rolling stock across border and requires appropriate technical solutions to be applied. Dealing with break of gauge could be time consuming and it could contribute to delays at border crossings. Increasing efficiency in dealing with brake of gauge is particularly important for border crossings with high freight traffic volumes. Efficiency of break of gauge operations could be increased with well-organized transshipment of containers and/or bogie changing; as well as with use of variable-gauge bogies in some specific instances.

Organization of block container trains, with *transshipment of containers* from wagons of one gauge to wagons of another (e.g. directly, or indirectly through container yards) is often a preferred option that provides minimized time for completion of overall border crossing formalities. To further increase efficiency it is possible to organize direct and simultaneous transshipment of containers on block trains moving in opposite directions.

Box 3 **Key elements for increased efficiency of break of gauge operations**

- Sufficient rail tracks with both gauges
- Sufficient capacity of facilities such as side-tracks, platforms, container yards;
- Availability of equipment (e.g. loading/unloading equipment such as gantry cranes and reach-stackers for transshipment and bogie-changing stations);
- Increased level of automation of loading/unloading, container transfers and shunting;
- Efficient coordination between neighboring railways for organization and optimization of processes;
- Efficient coordination between railways and other stakeholders involved (e.g. wagon owners, loading/unloading service providers, container yard operators)
- Organization break of gauge operations in parallel with other border crossing railway operations and control formalities

To mitigate potential inefficiencies due to lack of interoperability of other technical characteristics (e.g. returning of wagons or additional re-loading), commonly applicable standards should be clearly agreed along the corridor and along with efficient operational practices based on advanced information exchange between the railways concerned.

Read Learn more about enhancing interoperability from ESCAP, 2018, **Study on enhancing interoperability for facilitation of international railway transport**
See examples of dealing with break of gauge at border crossings along TAR network at ESCAP,2018, **Study on border crossing practices in international railway transport**

Watch **New China TV video** on Alataw Pass transshipment warehouse
https://www.youtube.com/watch?v=RlLVIF2wlQQ

Note Please share your views on the following:

- What are the experiences of dealing with break of gauge at Erlian(CN) - Zamiin-Ude(MN) border crossing?
- What is the status of new transshipment Zamiin-Ude Regional logistic park (benefits and remaining challenges)?

2.2 Legal interoperability

Legal interoperability takes in consideration railway legislative framework of international arrangements and national legislation in particular contractual obligations and harmonized documentation across entire railway corridor. Having unified legal railway framework is essential for smooth cross border movements and reduction of bottlenecks at border crossings; furthermore, it provides a common legal base for technical and operational requirements.

For example, **a common railway consignment** note along entire international railway transport corridor (e.g. CIM/SMGS consignment note for the international railway transport operation that is running between COTIF and OJSD areas) streamlines the movement across the border crossings where jurisdiction changes from one legal regime to other, without need for re-consignment and production of new railway consignment note.

2.3 Operational interoperability

Operational interoperability has two components; first are common railway operational practices including: harmonized international train timetables, train composition, traffic management, handover of trains, changing of locomotive and train crew, technical inspections and maintenance of wagons etc. and second are harmonized operational practices of Customs and other government agencies at the railway border crossings (e.g. harmonized documents for Customs transit, recognition of Customs control measures etc.).

Operational interoperability has to be focused on the objective to improve the efficiency and competitiveness of the railway transport along the corridor. Operational interoperability directly depends on existing level of technical and legal interoperability. The concept of interoperability is complex, and it contains several layers, multiple components and large number of interrelated elements. Therefore, the options for increased interoperability have to be identified and priorities have to be jointly agreed on strategic level between the countries involved at the international corridors. Implementation of railways interoperability projects has to be considered under long-term jointly agreed agenda. Several aspects of operational interoperability are further deliberated in this training manual.

3 Electronic information exchange for facilitation of border crossing by rail

To initiate and complete railway movement across borders it is necessary to meet operational requirements of the railways involved, as well as regulatory formalities of border agencies (e.g. Customs and other) in the countries along international railway transport corridors. Presently, at most border crossings in the region the processes follow manual and paper-based information flow. Information is exchanged by telephone, faxes, emails and manual hand over of documentation, which results in delays and inefficiency at the border crossings. Electronic exchange of information between railways and among railways and control agencies can significantly enhance the efficiency of processes at the border crossings.

3.1 Between railways

Electronic exchange of information between railways (e.g. advance information on consignment note; estimated time of arrival; list of the wagons to be handed over to the next railways) could streamline the organization of the processes at railway border crossings. Multilateral and/or bilateral arrangements between railways on electronic data exchange are necessary to set the parameters and rules for such interchange that is aimed at simplification and acceleration of border crossing procedures.

The advanced automated information systems support efficient organization of railway transport and provide a communication interface between railways and their clients, business partners and other railways undertakings. They are consisted of multiple sub-systems and applications employed on national and international level to provide web-based client services, to facilitate and optimize railway transport operation planning, to digitize processing of railway transport documentation, to automate traffic control, to support transport operations at railway stations and to enable cross-border data exchange. The advanced automated information systems could obtain necessary information and railway transport documents in electronic format and minimize inefficient manual data entry input at departure, at border-crossings and at destination railway stations.

There are three main system solutions for electronic information exchange in international railway transport as follows:

- solutions based on EU Telematics Applications for Freight - Technical Specification for

Interoperability (TAF-TSI) in European Union and corresponding OTIF Telematics Applications for Freight - Uniform Technical Prescription (TAF-UTP);

- solutions based on OSJD SMGS agreement and bilateral electronic data interchange (EDI) agreements; and
- solutions developed under the CIS Council for Railway Transport (CIS CRT) (e.g. the automated system MESPLAN, managed by the IT center of the CIS CRT used to develop the monthly consolidated freight loading plan at international level).

The TAF-TSI / TAF-UTP standards enable development of solutions for exchange of railway freight transport electronic messages between railway undertakings, infrastructure managers, wagon keepers and other stakeholders. Under TAF-TSI information is exchanged on: consignment note data; allocation of railway infrastructure capacity (path request); train preparation; train running forecast; movement of wagon and post trip data. The exchange of railway freight transport electronic messages based on TAF-TSI standards is operationalized by various IT solutions (applications and products) developed by several organizations.

Box 4

IT tools that support TAF-TSI processes and functions

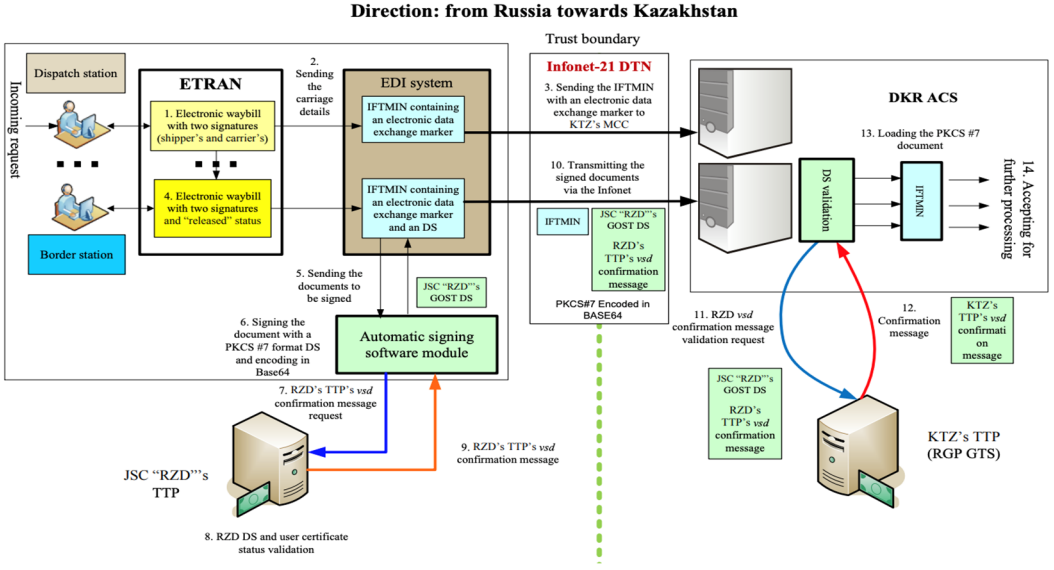
- ORFEUS - RailData, enables electronic exchange of railway consignment data
- International Service Reliability (ISR) - RailData, offers exchange of movement information for wagons in international traffic
- Common Components System (CCS) - Rail Net Europe (RNE), offers Common interface, Central Reference File Database and Certification Authority
- Path Coordination System (PCS) - RNE, for international path request coordination
- Train Information System (TIS) - RNE, supports international train management
- HEROES (H30) - HIT Rail, for advance information exchange on train composition
- Rolling Stock Reference Database RSRD2 – International Union of Wagon Keepers (UIP)

The CIS CRT and OSJD SMGS EDI solutions are based on United Nations/Electronic Data Interchange for Administration, Commerce and Transport (UN/EDIFACT) standards. The OSJD supports railway electronic information exchange by providing a guidance with numerous OSJD Leaflets on Coding and Informatics. Among other, the OSJD leaflets provide details on harmonized rules on exchange of data on movement of trains; library of standard electronic messages for international freight traffic under SMGS conditions in the UN / EDIFACT standards; Model Agreement on electronic data interchange between the national information systems for freight traffic; principles of organization of information security in the interaction of

digital telecommunications networks; recommendations on the use of technology of the trusted third party to ensure the legal relevance of electronic documents in a cross-border communication; typical technical specifications of cross-border cooperation between public key infrastructures used by railways.

A set of electronic messages are mutually exchanged between national information systems of several OSJD railways in the processes of admission and handing over of trains at interstate border-crossing points that allows tracking of wagons and goods along the whole network. Facilitation of cross-border operations is supported by electronic exchange of train handover sheets between the CIS and the neighbouring countries using Automated Traffic Control System (ASOUP) message 4770, and /or UN/EDIFACT message IFCSUM. In both cases, initial train handover sheets data are being communicated 2-3 hours before the actual crossing of the border. The communication process between the railway information systems employs the internet network as well as data transfer systems "Infoset-21" and HERMES.

Figure 1: Cross-border exchange of electronic documents between JSC RZD and AO NK KTZ



Source: OSJD Leaflet R 941-4: Typical technical specifications of cross-border cooperation between public key infrastructures used by railways operated by member countries of the OSJD (Fig.9 p.41). Available at: https://osjd.org/api/media/resources/11242

The level of electronic data interchange development and percentage of electronic and paperless document processed varies between different railway administration that are implementing EDI projects. Such projects usually start with signing of EDI agreement between the railways, and gradually further implemented with establishing adequate information systems, infrastructure for exchange for electronic documents with mutual recognition of the electronic signatures, paperless electronic document processing for movement of empty wagons, and finally paperless electronic document processing for transport of goods. While some railways managed to cover almost 100 per cent of freight turnover with paperless transactions (e.g. for the freight traffic between Russia and Belarus) other are continuously working on increasing of EDI usage.

Many challenges remain to harness the full potential of electronic exchange of information along the international railway corridors. The differences in documentary requirements, classification codes and various electronic exchange solutions across different railway transport regimes (e.g. COTIF or OSJD) impede seamless data exchange flows and may burden border crossing processes, increase time and costs, crate delays and negatively affect the quality and competitiveness of railway transport. To address such challenges, it is necessary to enable e-interoperability for electronic information exchange between railways.

Read: Learn more about electronic information exchange from ESCAP, 2018, **Study on Electronic information exchange systems in rail freight transport**
See examples of railways electronic information exchange systems in ESCAP,2018, **Study on border crossing practices in international railway transport**

Note: Please share your views on the following:

- What are the experiences and status of electronic information exchange of UBTZ with Russian Railways and Chinese Railways (including use of e-signature technologies)?
- What are the benefits and remaining challenges of electronic information exchange between railways in your country?

3.2 Among railways and control authorities

Completion of regulatory formalities at railway border crossings requires information and processing of transport related documents that have to be exchanged among the railways, Customs and other government agencies (e.g. border security guards, immigration, sanitary and phytosanitary, veterinary and

food safety agencies). Providing those information and documents in advance and in electronic format, would result in much more efficient organization of border crossing regulatory formalities.

Advanced systems for electronic information exchange among railways and control agencies support efficient organization of both railway transport and control formalities. Such systems provide a communication interface between IT systems of railways, Customs and other control agencies. Ideally, the available railway transport related data should be electronically transmitted and reused for processing at Customs and other regulatory IT systems with minimized inefficient manual data entry inputs. The immediate benefit of electronic information exchange among railways and control agencies is making the regulatory controls more efficient. That will allow further optimizing of railway processes at border crossings, avoiding unnecessary delays and increasing reliability of railway transport.

However, the benefits of electronic information exchange among railways and control agencies cannot be fully harnessed without harmonization with regard to Customs and other border crossing formalities in a larger context along international railway corridors. Harmonization of Customs and border crossing formalities for international railway transport should include harmonization of information needed with regard to:

- submission of advance electronic pre-arrival information (e.g. with regard to cargo declaration) and organization of Customs and other border crossing regulatory formalities on arrival of goods in Customs territory; and
- implementation of Customs transit procedures (including potential regional Customs transit), and simplification of Customs transit procedures for railways as authorized economic operator (AEO).

The WCO standards and recommendations instruments (e.g. WCO RKC, WCO SAFE Framework of Standards, WCO Data Model) support such harmonization and provide important guidance for harmonized Customs requirements (e.g. recommendations on data elements, time limits and responsibilities).

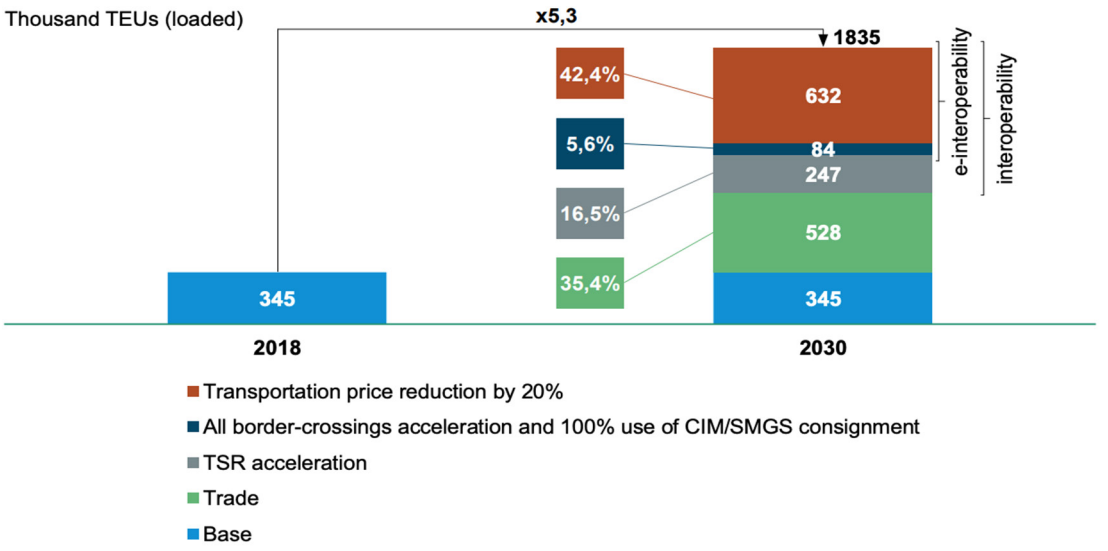
Expected challenges for linking electronic information systems of national railways, Customs and other control agencies include differences of the level of automation and computerization; lack of harmonized data requirements (e.g. railway transport documents and Customs declarations); legal requirements for authentication and acceptance of paperless electronic documents; complexity due to extensive regulatory requirements from multiple authorities.

Read: **Case Studies**

This would be a good time to read the case studies on Electronic information exchange between railways and Customs in Russian Federation and
INTERTRAN Project (Refer to case studies section at end of the module)

With increased automation and digitalization introduction of smart solutions based on electronic information exchange between railways and among railways and control authorities is expected to continue. Establishing e-interoperability with use of unified electronic CIM/SMGS common consignment note and interfaces that connect different railway systems, logistics systems and the systems of control authorities will result in accelerated the border-crossing, reduced time for freight transport by rail, and accordingly contribute to transportation price reduction.

Figure 2: Estimation of interoperability and e-interoperability input to Euro-Asian rail freight transit traffic under "the best rail case" option



Source: UIC/IEC, 2020, Eurasian corridors: development potential. Available at: https://uic.org/com/enews/nr/684/article/eurasian-corridors-development-potential

Recent UIC study has analyzed Eurasian corridor development and employed transportation modelling for volume forecasting and analysis of the elasticity of the demand for rail freight transport in relation to multiple relevant factors (e.g. digitalization of processes, border crossing improvements, speed of transit). According to the modelling results, the e-interoperability could contribute to about 48 per cent of the increased Euro-Asian rail freight transit traffic by 2030. That includes: 42,4 per cent as result of transportation price reduction and 5,6 percent as result of border crossing acceleration and use of CIM/SMGS consignment note.

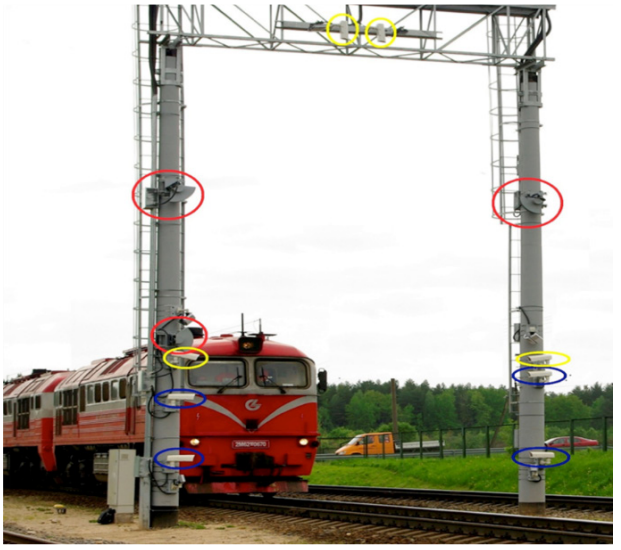
4 Use of new technologies for efficient and secure border crossing by rail

Railway border crossing processes play a central role in facilitation of international railway transport. Inefficient railway inspections as well as inefficient regulatory controls may cause lasting and/or occasional delays. Delays caused by inefficient completion of border crossing formalities could lead to increased transit time for railway transport and reduced reliability, predictability and punctuality of freight trains. New technologies could be employed to support efficient and secure border crossing, such as dynamic and automated inspections while the train is moving; non-intrusive inspections; electronic tracking of cargo and checking the integrity of containers/wagons with electronic seals.

4.1 Automated and non-intrusive inspections

The new technologies for *dynamic and automated inspections*, make it possible to collect data required for completion of required railway related inspections while the train is in motion. The systems used for dynamic inspections could be individual (e.g. electronic dynamic weighing scales) or multifunctional intelligent gate systems with a range of components (e.g. cameras; illuminators; scanners; RFID, wheel and other sensor readers) and several technologies employed (e.g. detecting and imaging; video processing; optical character reding (OCR); laser and thermal scanning; and various sensor technologies.

Figure 3: Automated inspection system



Source: Lithuanian Railways, 2015 (Kena border crossing)

The data collected with **dynamic and automated inspections** may include identification of wagon/container numbers; checking of wagon weight (axle load); detection and calculation of loading gauge dimensions and automated check of oversized cargo; checking of other security and safety parameters of cargo and transport means (e.g. overheating, chemical leaking, open doors and other irregularities).

The dynamic and automated inspection systems could be installed directly next to the border line (or its proximity), at location between the border line and the railway border crossing station (if the railway station is not located next to the border line) or at the railway border crossing station itself. Installing dynamic inspection/control systems in vicinity of the railway border crossing allows recording the data as the train approaches to the railway border crossing station. The data recorded could be automatically transmitted to the control centre at railway border crossing station prior to the arrival of the train at the station.

The new technologies for **non-intrusive inspections (NII),** make it possible to organize regulatory controls and other formalities without disruption of railway processes, opening of containers/wagons for conducting physical controls, or other manual engagement of control authorities in border crossing formalities. The systems and technologies used for non-intrusive inspections include systems based on X-ray and gamma-ray radiography for scanning of containers/wagons, radiation detectors, systems with thermal image technologies, electronic and video surveillance systems. The systems for non-intrusive inspections

could also be dynamic (e.g. dynamic scanners that enable scanning while the train is in motion). Control authorities should define appropriate risk indicators for better targeting of controls with the use of non-intrusive inspection tools and significantly reduce the need for physical controls.

The data collected with the technologies for dynamic and automated inspections by railway stakeholders at border crossings could be also relevant for the regulatory controls of control authorities. Similarly, the railway stakeholders may require relevant information based on control results from non-intrusive inspections to better organize railway operations. Therefore, sharing of information based on dynamic, automated and non-intrusive inspections at border crossings should be encouraged.

Implementation of automated and non-intrusive inspection/control systems could significantly improve the efficiency of railway technical and commercial inspections as well as of regulatory controls. For example, at Kena railway border crossing the new technologies installed include dynamic weigh scales situated at main railroad lines, automated train and wagon commercial inspection system (AKAS system) and dynamic x-ray scanning system. The use of new technologies has significantly reduced the processing time on train handling (from 175 minutes to 50 minutes - for goods which are not subject to veterinary and phytosanitary control). The quality of inspections was improved, with decreased number of employees and significant financial savings with regard to the operational costs (Lithuanian Railways, 2015).

Read — See more details on use of new technologies (e.g. at Kena Lithuania and Rezekne Latvia border crossings) at ESCAP, 2018, **Study on border crossing practices in international railway transport**

Watch — Lithuanian Railways Video: on Automated train inspection system at Lithuanian Railways Border Stations (see file: AKAS_LTU.mp4)

Note — Please share your views on the following:

- What are the new technologies already employed at Mongolian railway border crossings? How they contribute to increased efficiency at border crossing inspections and controls?
- What are the possibilities for further improvement and information sharing of data collected from new technologies in Mongolia?

4.2 Electronic tracking for secure border crossing

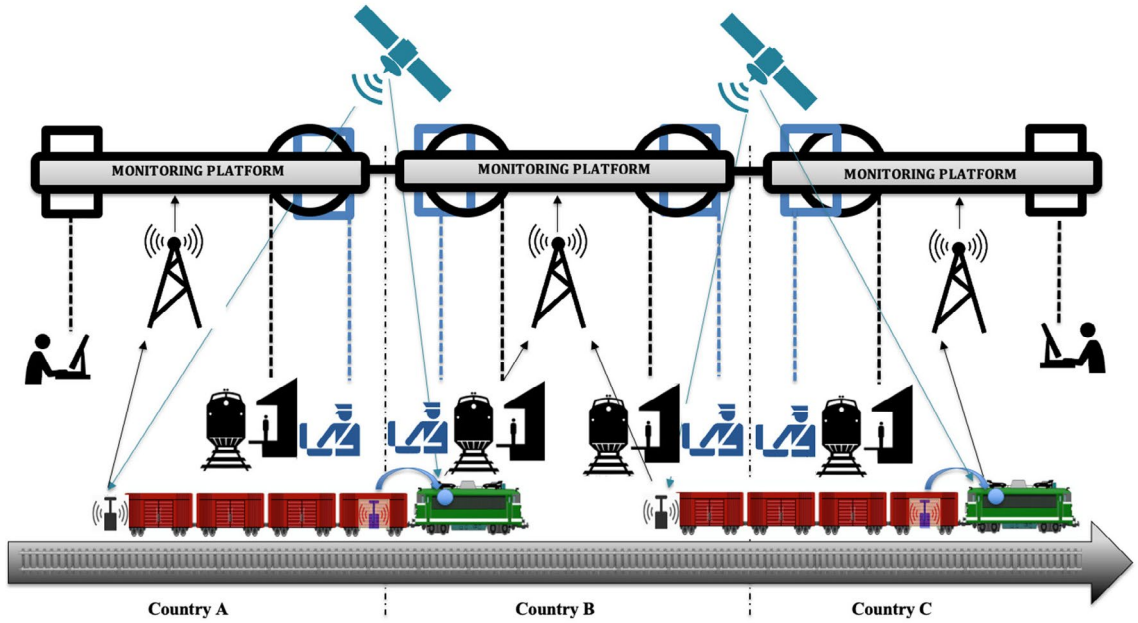
The systems for **electronic tracking with electronic seals** (e-seals) make possible to have real time monitoring of railway transport movements, within a Customs territory of a country and/or across borders along international railway corridors. The systems for electronic tracking are using technologies such as satellite positioning systems, cellular communication systems, radio frequency identification (RFID) enabled e-seals, advanced web-based software and computer networks. The use of electronic tracking with e-seals could facilitate cross-border transport while addressing the security concerns of the control authorities. The e-seal combines physical seal to secure the cargo and mechatronic component to identify the status of the e-seal and enable checking of its integrity.

The use of e-seals that offer extended security may be:

- mandatory (e.g. for specific high-risk types of goods, that otherwise will be restricted to move under Customs transit procedure within or across the Customs territory);
- conditional (e.g. for granting greater simplifications in Customs transit such as authorized consignor/authorize consignee and self-sealing, waiver or reduction of transit guarantee requirements and facilitation of border crossing formalities); or
- voluntary (e.g. to demonstrate high level of cooperation with Customs authorities and offer higher security that may result in Customs facilitation and reduced Customs control measures based on Customs risk assessment).

The integration between the e-seal and the electronic tracking system could be established: a) directly with the e-seals (if they are designed as multifunctional devices that include e.g. satellite positioning system (SPS) module and cellular communication system (CCS) module) and/or b) indirectly via additional device (tracking unit) that has its own SPS module, it is able to communicate with the e-seal (e.g. via RFID signals) to check their status, and further transmits the messages to the monitoring platform using its own CCS module. The monitoring platform is supported by web based electronic tracking application software to track the railway transport movements and the status of the e-seals. The electronic tracking could be organized in one country only or in several countries along international railway corridors.

Figure 4: Secure Cross Border Railway Transport Concept (multiple country option)



Source: Adapted from ESCAP Secure Cross Border Railway Transport Model available at: https://www.unescap.org/resources/secure-cross-border-transport-model

Electronic tracking systems with e-seals in railway transport have been implemented in several countries in the region including India and Russian Federation.

Box 5

Electronic Cargo Tracking System (ECTS) in India

Using the concept of ESCAP Secure Cross Border Transport Model, the Customs authorities in India have started the ECTS pilot programme to facilitate the movement of traffic-in-transit of third-party imports for Nepal (by road and rail). The Nepalese traders (or their Customs brokers) (or transhipment agents) that wish to use the ECTS facility are required to register and use the website of the Manged Service Provider (Transecure).

Since April 2018, the ECST system provides a digitalized process for filing of electronic Customs Transit Declaration (e-CTD). Submission e-CTD is enabled through the ECTS web application, which is linked to the infrastructure for electronic sealing and GPS based tracking of transit cargo. Accompanied documents to the e-CTS are uploaded in PDF format (e.g. cope of invoice, packing list).

Printed copies of e-CTD are used to record the ECTS seal number affixed by Customs officer at departure and to accompany the transport to the Customs office of exit/destination. Un-sealing of the e-seal is carried out at the exit /destination railway station in India. Reconciliation/discharge of the transit is done automatically with a "trip-report" generated by the ECTS system and available to the Customs offices.

The use of ECTS in India expedites Customs clearance and simplifies procedures. The Nepalese importers can turn around containers in 14 to 21 days, avoid paying demurrage and detention charges because cargo movement is faster.

Sources: India Customs Public Notice 33/2018; Transecure, 2019 Presentation on Transit of Nepal's Cargo through India (ECTS)

In addition to increased security the system for electronic tracking can also provide increased efficiency if the implementation of the system is accompanied by reduction of paper-based procedures, and simplification of Customs formalities (e.g. reduction or waiver of guarantee requirements, physical inspections). Simplified regulatory formalities could contribute to reduced transit time and lower overall costs (e.g. due to faster turnaround time, lower insurance costs, even though usually there are some additional costs for the use of e-seals). Developing electronic tracking systems also has some challenges that have to be addressed such as ownership/operator modes and costs for using of system, technical requirements and options on equipment to be used (in particular on cross-border level).

Similar electronic tracking systems (without Customs e-seals) that enable increased visibility could be used by railways to provide commercial services their customers. Such electronic tracking systems may provide information to the customers on location of their cargo; security of cargo (if non-Customs e-seals are being used), and condition of the cargo depending on sensor technologies employed (e.g. temperature, humidity, shock, load).

Read

See more details on the use electronic navigation seals (ENS) based on Global Navigation Satellite Technology (GLONASS) in Russian Federation at the website of Sealing Operator - Digital Platform Development Center **(CRCP): How the System Works**

Note

Please share your views on the following:

- What is the experience in using electronic tracking systems with e-seals in your country?
- What could be most important benefits and challenges from implementing electronic tracking for increasing security, efficiency and visibility of railway transport in your country?

5 Facilitation of Customs transit procedures for international railway transport

5.1 Use of railway consignment note as a Customs document

The organization of railway operations and regulatory formalities at border crossings requires processing of different railway and Customs documents. When the cargo in international railway transport is crossing from one country to another there is a divergence of formalities with numerous railway transport documents, as well as Customs documents to be processed. Having multiple different railways and Customs documents along the international railway transport corridors increases complexity and contributes to delays. That is most evident in the case of transit where it is necessary to repeat processing of same/similar documents which may have many same/similar data elements at each border.

Having a common railway consignment note (e.g. CIM/SMGS) streamlines the transport processing across the border crossing. This railway transport facilitation could also be reflected as a Customs facilitation since it is possible to use the same railway consignment note (e.g. CIM-SMGS) as a Customs document (as recommended with Article 4 (7) of the Annex 9 on Facilitation of border crossing procedures for international rail freight of the International Convention on the Harmonization of Frontier Controls of Goods (1982)).

Railway consignment note (e.g. CIM-SMGS consignment note), could be used as a Customs document that is necessary to be submitted in accordance with Customs legislation for completion of border crossing formalities and procedures such as Customs transit by rail. This solution makes it possible to reuse already available railway data / documents, facilitate submission of Customs transit declaration, avoid the need for preparation of new Customs transit documents at each border crossing and reduce the involvement of intermediary parties (e.g. Customs brokers, forwarding agents) in Customs transit formalities.

The railway consignment note could be in paper-based format only; dual paper-based and electronic format where consignment data could be electronically exchanged in advance (as elaborated in earlier) or in a fully paperless format (e.g. paperless electronic CIM-SMGS). Railway consignment note in any of these formats (paper-based, dual, paperless) could be applicable to be used as a Customs transit document. Even though the railway consignment note is the main railway document that could be used for Customs document, the data available from other railway documents such as wagon list / container lists and other information available to the railways may be used under the same concept (reusing railways documents and

data for processing of Customs transit formalities).

In Customs transit procedure the carrier (e.g. the railways or its representative) could be directly involved as a principal / declarant. The Customs transit declaration could be made by the railways or its representative that acts as principal/declarant. The WCO recommends that any commercial or transport document setting out clearly the necessary particulars (e.g. railway consignment note) should be accepted as the descriptive part of the goods declaration for Customs transit (WCO RKC, Specific Annex E; Ch.1 Customs Transit - Standard 6). The WCO has also identified the maximum data sets for Customs transit declaration with the WCO Data Model.

If according to the Customs regulation the Customs transit declaration should be submitted in an electronic form, then the data elements of such declaration could be based on the data already available in the railway consignment note. If a paper-based Customs transit declaration is required to be submitted (at the office of departure, transit offices and the office of destination), then it could be substituted by the railway consignment note and a separate Customs transit declaration should not be required.

The of use of the transport documents, such as railway consignment note, as a Customs transit declaration is allowed in the legislation of the Eurasian Economic Union, European Union, and several national Customs legislation in the region.

Box 6

Simplification of Customs transit by rail in Europe

The Customs transit procedure by rail in accordance with EU Customs regulation and Convention on a Common Transit Procedure (1987 as amended) could be organized as:

- **simplified customs transit procedure** with paper based CIM (or CIM/SMGS) consignment note as a Customs transit declaration, or
- **standard Customs transit procedure** with paperless electronic Customs transit messages in the New Computerized Transit System (NCTS), (with paper based CIM (or CIM/SMGS) consignment note that serves only as a transport document); or
- **standard Customs transit procedure** with paperless NCTS Customs transit messages, where the data from the electronic form of the CIM (or CIM/SMGS) consignment note is used to be processed as a Customs transit declaration by NCTS).

Presently with the European simplified Customs transit procedure, the rail operators are mostly using paper based CIM (or CIM/SMGS) consignment note instead of the standard paperless EU NCTS declaration. Customs processing of the paper-based consignment note is minimal, and the rail operators are required to make the records held at their accounting offices, available for Customs control purposes.

See more details at: European Commission, May 2019, **Transit Manual Amendment (Goods Carried by Rail)**

Box 7

Simplification of Customs transit by rail in Turkey

In 2016, Turkish Railways (TCDD Taşımacılık A.Ş.) was authorized by the Turkish Customs to use simplified procedures for the Customs transit procedure in transport by rail based on the provisions of Turkish Customs legislation and the Convention on Common Transit Procedure. For the simplified procedure for Customs transit by rail in Turkey in addition to the paper based CIM consignment note, there is an electronic data exchange with the Turkish Customs authorities.

The Turkish railways (or their representative) have to submit to the Customs authorities an entry summary declaration for the goods to be brought into the Customs territory of Turkey. Arrival notification has to be submitted upon arrival of the train. The entry summary declaration and arrival notification are submitted electronically to the Customs authorities at the border crossing. The Customs authorities have to approve the summary declaration and arrival notification following the comparison of the electronically submitted information with the information from the paper based CIM consignment note.

For the processing of Customs transit operation within Turkey (e.g. from the border crossing Customs office to the inland destination Customs office) electronic transit notice for each wagon has to be submitted by the railways, before departure of the train. The transit notice contains only minimal information: wagon number, CIM consignment note number, the planned shipment date, Customs office of departure, and Customs office of destination. The transit notice is submitted to the Customs IT system using electronic signature technology.

The information on accepted transit notice is also available at the departure and destination Customs offices. The registration number has to be written on the paper based CIM consignment note, which has to be labelled/stamped with a green pictogram that indicates a transport carried out under simplified railway procedure. Additional Customs transit declaration is not required. Future project activities of fully paperless electronic entry summary declaration are expected to reduce the time needed for Customs formalities for entry customs formalities from 3 minutes to 1 minute per wagon.

Sources: Turkish Customs (2018; 2019)

5.2 Potential for new international Customs transit arrangement for railway transport

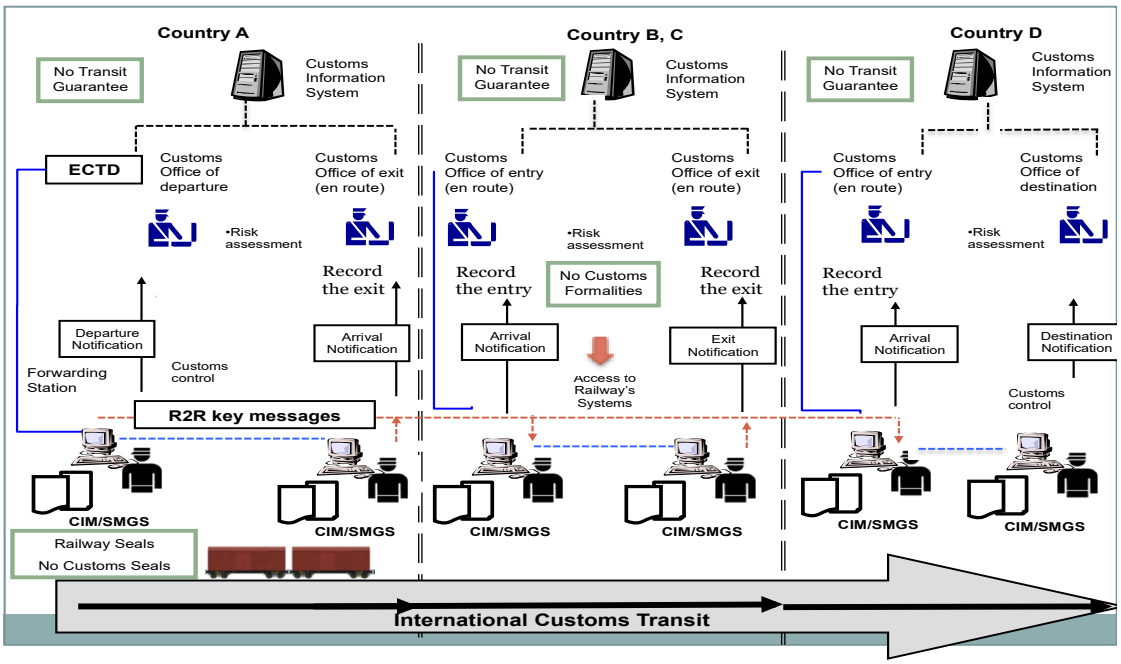
Presently the railway Customs transit procedures are regulated mainly on national or Customs union level (e.g. EU, EAEU). In order to address the issue with fragmentation of Customs transit operations along international corridors, due to the absence of broad international instrument on railway Customs transit, it could be considered to introduce a new international arrangement(s) on railway Customs transit along TAR network and beyond.

The concept on new international railway Customs transit system could be based on:

- Use of harmonized railway consignment note (e.g. CIM/SMGS) as a Customs transit declaration (paper-based / electronic);
- Electronic information exchange of railway Consignment note between railways (R2R), electronic information exchange among railway and Customs (R2C) on pre-arrival information / Customs transit declaration;
- Simplifications for railways as an authorized economic operator, including possibility for waiver of Customs transit guarantee;
- Harmonization of Customs transit procedures at Customs offices of departure, transit and destination at national / Customs union / international level as much as possible;
- International cooperation between the railways and between Customs (e.g. mutual assistance regarding investigation of infringements and irregularities if needed).

The concept on new international railway customs transit system could be implemented as a single instrument, or due to complexity of such arrangement as a combination of framework agreement with several multilateral bilateral arrangements (e.g. an umbrella solution that could potentially harmonize EU, EAEU, ASEAN and other multilateral/bilateral arrangements). The option of umbrella solution could be focused only on railway transport or it could have a larger platform that covers Customs transit in all modes of transport including rail. Flexible solutions are possible that allow minimized fragmentation of Customs transit procedures even without creating a single automated international railway Customs transit system.

Figure 5: Example of electronic information exchange under the concept of new International Railways Customs Transit System (distributed solution)



Challenges that have to be addressed include redesign/simplification of procedures and documentary requirements, harmonization of data elements on national and cross-border level and establishing interfaces for linkages between railways and Customs IT systems. With sufficient harmonization and standardization achieved based on commonly agreed concept, it is possible to still have distinctive Customs transit systems that offer streamlined harmonized and distributed Customs transit solution based on common railway consignment note as a Customs transit declaration.

Using the railway consignment note (in particular unified CIM-SMGS consignment note) as a Customs declaration, streamlines Customs formalities and procedures (in particular Customs transit). Reusing of railway transport documents and other available data, and electronic information exchange of Customs transit data based on railway consignment note enables efficient completion of Customs formalities. Streamlined and simplified border crossing processing (as a result of using railway consignment note as a Customs document), could contribute to reduction of unnecessary delays and ultimately to reduction of the time and costs for completion of international railway transport operations.

Read: For Customs transit by rail in Russian Federation **see** the case studies on Electronic information exchange between railways and Customs in Russian Federation and INTERTRAN Project
(Refer to case studies section at end of the module)
See more details and examples on facilitation of Customs transit by rail at
ESCAP, 2018, **Study on border crossing practices in international railway transport**

Note Please share your views on the following:

- What is the experience in using railway consignment note as Customs transit declaration in your country? Is it possible to further facilitate organization of Customs transit on national level?
- What are your views on the concept of a new International Railways Customs Transit System?

6 Joint border controls and streamlined border crossing

Railway border crossings are bottlenecks, where railways and other related stakeholders have to interact between themselves and with control authorities (Customs and other) to complete necessary formalities. Some of the factors that lead to inordinate delays are inefficient organization of border crossing operations, lack of coordination, exchange and processing of paper-based documents, lengthy and uncoordinated regulatory controls of Customs and other government agencies. Introduction of smart solutions such as electronic information exchange, new technologies for efficient and secure border crossing, efficient break of gauge operations, automation of loading/unloading, use railway consignment note as a Customs document are addressing those challenges.

Implementation of such smart solutions improve the level of coordination between the stakeholders and may contribute to reorganization of border controls and processes within the country (e.g. joint border controls and use of single window facilities) and across borders (e.g. with development of single stop joint border controls) that could further streamline the movement across borders.

6.1 Joint border control and use of single window facilities within a country

Improved coordination and joint border inspections/controls at border crossings, organized between railways and regulatory agencies (e.g. Customs, border security and immigration, transport, sanitary, phytosanitary, veterinary, food safety and other inspections) are key requirement for increased efficiency of movements across the borders.

The railways in the region in general operate only in their own country, which requires change of locomotive/staff to be organized at one of the railway border stations as agreed between neighbouring countries. In accordance with legal requirements and operation rules, the handover process at that border interchange station consists of railway commercial and technical inspections.

Apart from jointly agreed handover process, the railways and regulatory authorities at the two neighboring border stations have separate border crossing procedures (railway and regulatory) and separately conduct inspections/controls (railway and regulatory). The railway inspections and regulatory controls are organized in sequential manner first at the exit border crossing station in one country (first stop) and then at entry border crossing station in other country (second stop).

Joint border inspections/controls within a country are organized at many existing border crossings. Coordination and joint border inspections/controls between railways and regulatory agencies within the country at each of the border crossing stops (separately in exit country and separately in entry country) could take different forms such as: a) transfer of control responsibilities and b) joint inspection teams.

To avoid large number of regulatory agencies at railway border crossing stations, it is possible to transfer some of the control responsibilities to a designated agency (e.g. Customs). Reduced number of control authorities at the railway border crossings increases the efficiency in organization of border controls.

The Customs and other control authorities (border security and immigration, transport, sanitary, phytosanitary, veterinary, food safety) can conduct control activities jointly, or independently and simultaneously, at one location at the railway border crossing station (e.g. at station side-tacks, Customs yard, or at dedicated side-tracks for veterinary/phytosanitary control).

Railway and regulatory inspections could be coordinated and conducted jointly. Coordination and joint railway and regulatory inspections/controls could reduce delays and streamline the border crossing control process. Efficient coordination among railways and border control authorities may include exchange of information in electronic format and joint use of surveillance and control equipment.

Box 8

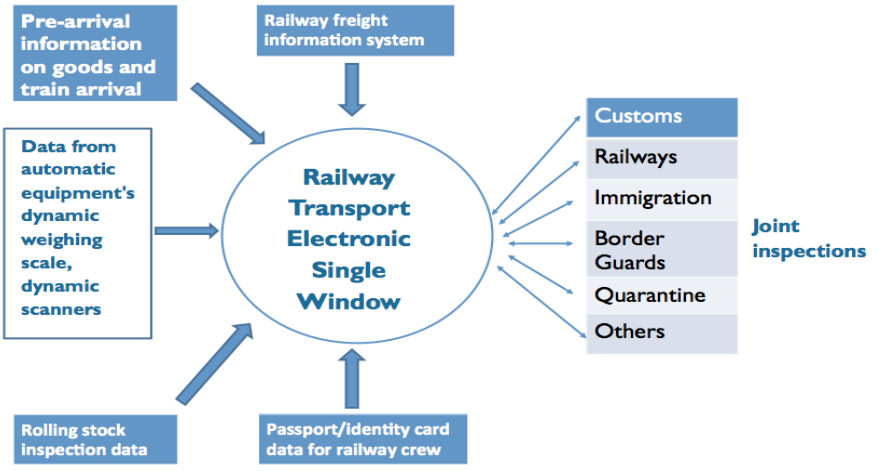
Joint Border Controls in Russian Federation

- Typical border crossing controls are organized under "single window" principle, where the Customs authorities are empowered for a first level examination of the documents in the field of sanitary-quarantine, veterinary and phytosanitary control. Customs authorities coordinate with other relevant state control authorities if additional controls (other than first level examination of documents) are required.
- Initial inspection on arriving train is organized jointly with a commission that includes Customs, border guards and railway station staff.

Source: ESCAP (2018), Study on Border Crossing Practices in International Railway Transport

Use of single window facility for railway transport facilitates and enhances coordination of railways, other related stakeholders and regulatory authorities. The railway transport electronic single window could use modern technologies and a neutral platform to receive and store relevant information from multiple sources e.g. railways, freight forwarding agents, consignors/consignees, automatic control equipment and dynamic scanners employed at border stations. The system should support interconnection with multiple information systems such as those of railways, Customs and other government agencies and expedite their formalities to release transport means and goods at the border crossing.

Figure 6: Single window facility for railway transport



Source: ESCAP, 2018, Draft framework for enhancing efficiency of railway border crossings along the TARN and beyond

Introduction of railway transport electronic single window and linking railway information systems with the systems of other regulatory agencies, would lead to more efficient information exchange. In particular, it would alleviate the need for resubmission of similar information and contribute to smooth cross-border operations and a reduction in delays at railway border crossings. It would also aid risk management and, accordingly, enhance the efficiency of the controls conducted by Customs and other government agencies.

If there is already developed national single window facility in the country, linking railway information systems in order to support railway border crossing processes could be considered. The railway transport electronic single window primarily supports joint border crossing controls within the country (and potentially it could be expanded to support coordination of border crossing formalities on cross-border level).

More comprehensive regulatory single windows solutions may include all modes of transport and additionally it could be linked/integrated with digital logistics platforms that cover business-to-business (B2B) transport related information exchange. Some of the B2B data could be re-used for electronic information exchange between busines and government agencies (B2G, G2B) (e.g. Customs, transport authorities).

Box 9: **National Transport and Logistics Public Information Platform (LOGINK) in China**

The LOGINK platform in China was developed to help business partners exchange and share logistics information across the entire supply chain. The platform provides services through its portal on Internet. The system interfaces with systems of government authorities (e.g. Customs) and commercial logistics information platform for all modes of transport including railways.

Government departments and business companies can exchange data exchange for regulation purposes (G2B, B2G) and business requirements (B2B) or make information queries such as transport status based on information resource directories and catalog maintained by LOGINK.

LOGINK provides public information services such as carrier registration, regulation compliance and violation information. It also provides other information services such as e-booking, freight rates inquiry, tracking, electronic waybill through connection to railway departments, as well as services like Customs clearance through link or interface with Customs departments.

The LOGINK is connected via NEAL-NET (North East Asia Logistics Information Service Network) to the logistics platforms in Japan (COLINS) and Republic of Korea (SPIDC).

Source: ESCAP, 2019, Regional Study: The use of Logistics Information Systems for increased efficiency and effectiveness

Read: Learn more about development of Single windows and logistics/transport digital platforms from ESCAP Studies and Instruments:

- **Study on Integration of Transport Requirements in Single Window Environment** (2016)
- **Cross-Border Single Window Interoperability: A Managerial Guide (2018)**
- **Regional Study: The use of Logistics Information Systems for increased efficiency and effectiveness** (2016)
- **Framework Agreement on Facilitation of Cross-border Paperless Trade in Asia and the Pacific** (2016)

Note Please share your views on the following:

- What is the experience of railways related joint border controls, single window facilities and logistics platforms in your country?
- What are the benefits / challenges for the railways in Mongolia to participate in such activities?

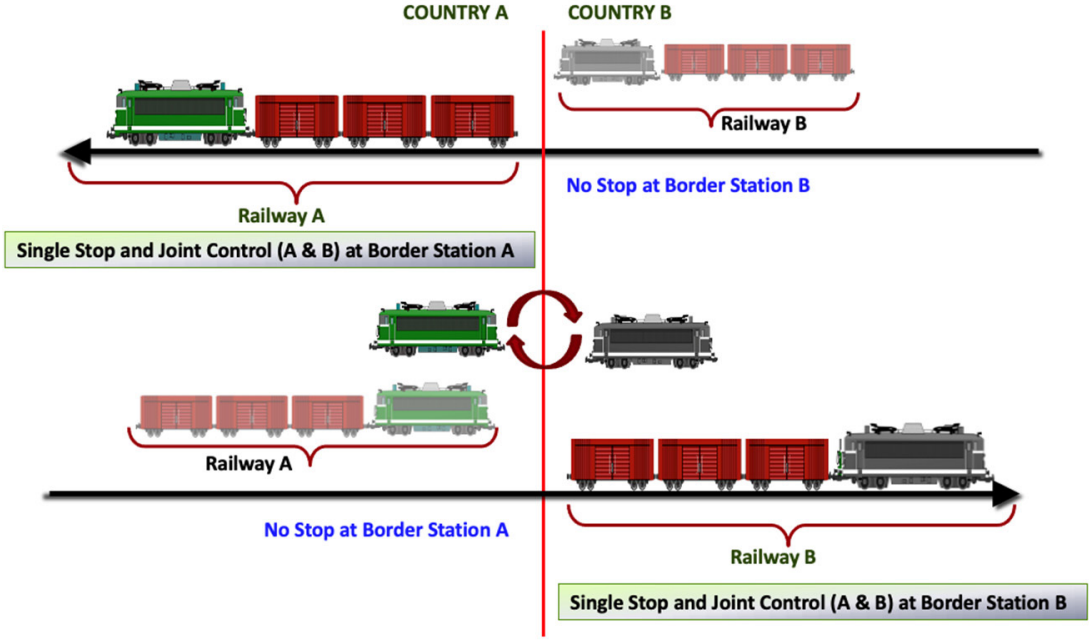
6.2 Single stop joint border crossing and crossing the border without stopping

Single stop inspections at joint border crossing is a solution where only one common border station between the neighboring countries is designated as a joint border control checkpoint. The arrangements on joint border crossing station are normally part of bilateral agreement that details formalities for organization of railway processes and control procedures (e.g. customs, sanitary, food safety, veterinary, phytosanitary inspections).

At the designated joint border crossing station, the change of locomotive/staff will be organized. The railways and control authorities from both countries may conduct the necessary inspections/controls jointly at a common inspection area or independently (sequentially or in parallel) at other dedicated inspection areas located at the joint border crossing station (e.g. only at exit or at the entry border crossing station).

If the border crossing is a break-of-gauge point, then all break of gauge operations (e.g. transhipment of containers and/or change of bogies) should be organized at the same joint border crossing station as well. The trains do not have to stop at the other border station at all.

Figure 7: Joint border crossing stations with single stop inspection (at entry)



Joint border railway stations are very rare, despite the huge potential they offer for streamlining of border crossing procedures and reduction of time to cross the borders by rail. An example of single stop border crossing is Padang Besar in Malaysia (for passenger railway transport only), where all railways and regulatory controls are conducted (Customs and immigration) and the passenger trains do not have to stop at the border crossing in neighbouring Thailand.

Potentially it could be possible to organize **crossing the border without stopping at the border stations.** In such case it will be required to have common regulatory procedures and controls organized only at departure and destination stations, in parallel with operational procedures for railway traffic management. The trains do not have to stop at the border stations at all. The railway undertakings should be able to operate on the networks on both neighboring countries in this case. The solution for crossing the border without stopping may be achievable for the unions of countries which are developing common railway transport area and have common Customs territory. Such arrangements are very demanding to made and therefore extremely rare and limited. For example, for some railway border crossing movements between Norway and Sweden there is no need for the trains to stop at the border at all. Customs authorities from both countries are empowered to perform Customs control on behalf of each other. Such control will take place at the first inland station in Norway or in Sweden where the train has to stop.

Read: See more details and examples on joint border controls at ESCAP, 2018, **Study on border crossing practices in international railway transport**

Case Study

This would be a good time to read the case study on Border crossing at Rezekne railway station (Latvia) that shows possibility to minimize the controls at the border station and transfer main railway operations and regulatory controls to the next major inland departure/destination railway station.
(Refer to case studies section at end of the module)

7 Corridor management mechanism for railway transport

The railways in the region have their own strategies in endeavour to address the numerous challenges to become competitive. We have identified many common goals and potential solutions for some of the challenges (e.g. digitalization and automation, electronic information exchange, use of new technologies, use of railway consignment note as a Customs document, joint border controls). However, the way of defining such common solutions and the scope for their implementation could substantially differ from country to country, depending on their individual needs, specific characteristics of railway transport sector and stages of development. Despite the differences that have to be acknowledged, it is necessary to achieve certain level of harmonization along international railway corridors in order to develop interoperable solutions that will facilitate movements across the borders.

To minimize uncertainties and difficulties in arrangement of fragmentated railway transport operations along international railway corridors, it is crucial to nurture harmonized and coordinated approach with regard to infrastructure development, transport services offered, logistics coordination, trade and transport facilitation. Harmonization and coordination efforts are needed among all countries involved in the railway corridor that include railways and their partners and relevant authorities (e.g. Transport, Customs).

There are many institutional arrangements through which these issues can be addressed. In addition to bilateral, multilateral, sub-regional and international agreements, in some cases specific international corridor arrangements have been developed that establish formal corridor management mechanisms as a joint management structure agreed amongst the countries and railways that share a common interest as part of a specific corridor.

Box 10 **Key elements of international corridor arrangements**

- Common objectives (e.g. cooperation and coordination, facilitation, competitiveness)
- Legal framework (e.g. bilateral/multilateral/international agreements, MoU, protocols)
- Institutional framework and governance structure of corridor management mechanism (e.g. Ministerial meeting; Steering committee/Management board; Advisory/Expert groups; Secretariat)
- Responsibilities of different stakeholders involved in the corridor management mechanism (e.g. composition, frequency of meetings, functions, planning, reporting, and implementation responsibilities)

Corridor management functions:

- Coordination of planning, financing and development of transport infrastructure
- Consultation, identification and resolution of bottlenecks
- Enhancing legal interoperability and initiating regulatory reforms
- Enhancing technical interoperability and implementation of efficient mitigation solutions
- Enhancing of railway transport operational interoperability
- Harmonization and facilitation of border crossing Customs and other regulatory procedures
- Corridor performance monitoring (transport, logistics, regulatory procedures monitoring)
- Stakeholder coordination, outreach activities and promotion of corridor use
- Capacity building (e.g. technical assistance and studies)

There are several different experiences in railway corridor management around the world (e.g. in North America, Europe and ESCAP region) that could be studied in search of good practices.

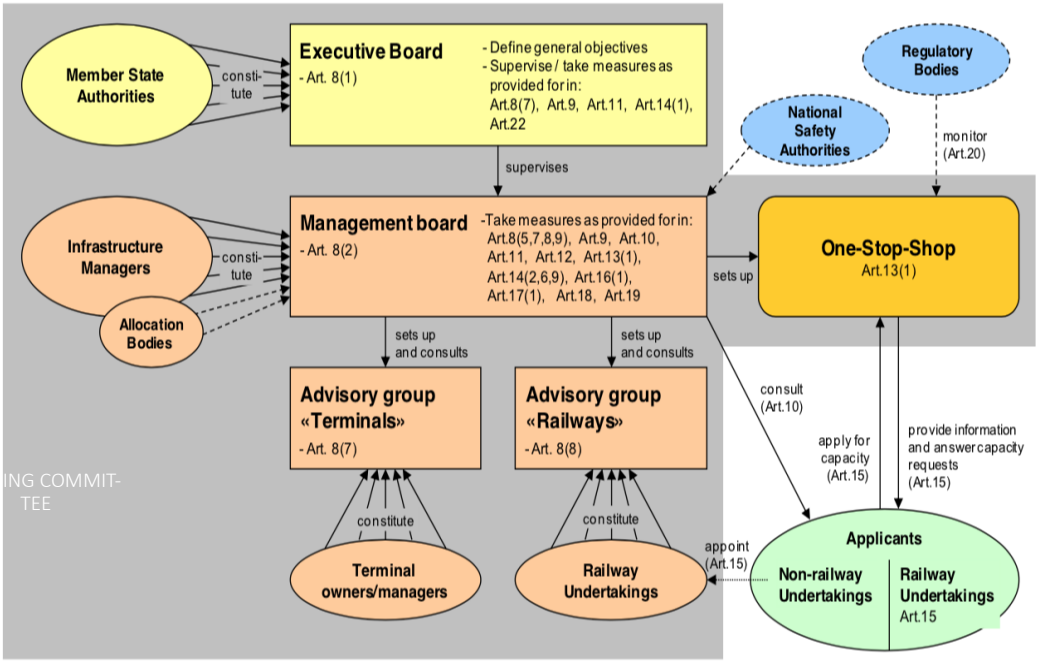
Box 11

European experience in railway corridor management

The establishment of European Rail Freight Corridors (RFC) is regulated at European Union level with Regulation concerning a European Rail Network for Competitive Freight (Regulation EU 913/2010). Presently there are 11 operational RFC, and each of them has similar governance structure comprising of executive board, management board and advisory groups in accordance with the EU regulation.

The European railway transport policies have some specific characteristics of such as separation of infrastructure managers for the operation of transport services and open access for all licensed railway operators over entire railway network of the EU. Those characteristics are reflected in the railway corridor management. For example, a Corridor-One Stop Shop (C-OSS) is establishes at each RFC which is a joint mechanism of the infrastructure managers responsible for providing a single point of contact to request and receive answers regarding infrastructure capacity capacity (train pathways) for international freight trains.

Figure 8: EU Rail Freight Corridors governance structure



Source: European Commission, DG MOVE, June 2011; Handbook on the Regulation concerning a European rail network for competitive freight (Regulation EC 913/2010); (Figure 3.1 – page 21); Available at:

https://ec.europa.eu/transport/sites/transport/files/modes/rail/infrastructures/doc/erncf_handbook_final_2011_06_30.pdf

The railway corridors in ESCAP region and corridor coordination are much more diverse than European railway corridors and not necessarily formally structured or covered with a single corridor arrangement. The examples include:

- **New Eurasian Land Bridge Economic Corridor** (China, Kazakhstan, the Russian Federation, Belarus and EU members), has a jigsaw of agreements and its own institutional arrangements, committees and working groups dealing with specific issues. Commercial arrangements for facilitation of movement across corridor are included (e.g. logistics services by JSC United Transport and Logistics Company - Eurasian Rail Alliance (UTLC-ERA) jointly owned by Russian Railways, Belarusian Railways and Kazakhstan Railways);
- **The Trans-Siberian route** is supported by the non-commercial transport association Coordinating Council on Trans-Eurasian Transportation (CCTT). The CCTT presently has more than 100 member societies from 23 countries, including railways of Europe, Asia and the CIS states. The permanent chairman of CCTT is the President of the Russian Railways. The principal organs of the CCTT are the

Plenary meeting of the CCTT, the CCTT Board, the Secretariat of the CCTT and the Independent Auditor. The CCTS has several working groups for different activities (e.g. Working group on IT development; Working group on Harmonization of international transport law and Working group on increasing the competitiveness of the Trans-Siberian Route);

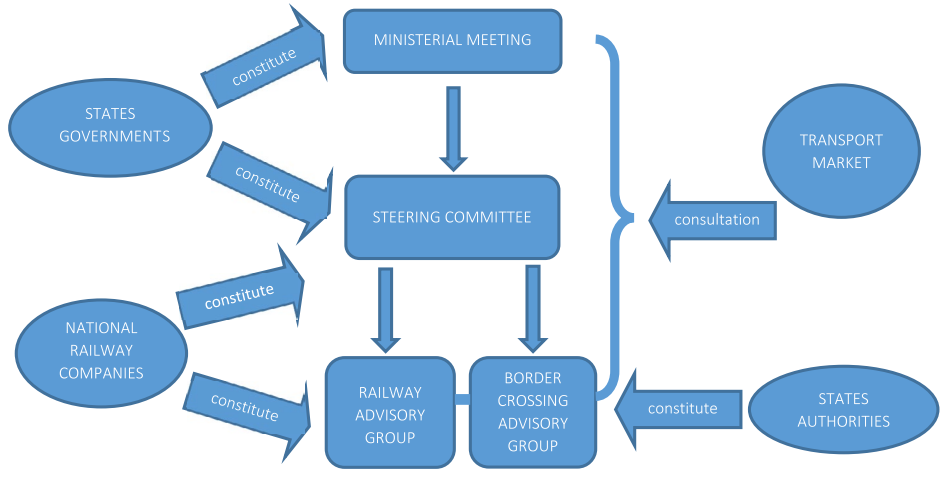
- **China-Mongolia-Russian Federation Economic Corridor**, based on several road transport, railway transport, transit, and Customs agreements. A range of bilateral and trilateral cooperation arrangements between competent authorities; transport departments; customs departments; chambers of commerce and industry; local and border cooperation forums; takes form of regular meetings, various working groups and round tables. There is a comprehensive "Program for Creating the Economic Corridor China - Mongolia – Russia" (2016) with "List of projects to create an economic corridor China - Mongolia – Russia" that include railway transport projects;
- **Central Asia Regional Economic Cooperation (CAREC) corridors**, (Afghanistan, Azerbaijan, China, Georgia, Kazakhstan, Kirgizstan, Mongolia, Pakistan, Tajikistan, Turkmenistan, Uzbekistan). ADB supported program that includes with Corridor Management Units (CMUs) for Designated Rail Corridors (DRCs) and standardized corridor performance measurement and monitoring (CPMM) tool;
- **International North-South Transport Corridor (INSTC)** (India, Islamic Republic of Iran, and Russian Federation, later expanded to include Armenia, Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Ukraine, Belarus, Oman, Azerbaijan and Syria) with Coordination Council and two expert groups on Commercial and operational maters and Documentation, Customs matters and related issues;
- **ECO Transit Corridors** (Afghanistan, Azerbaijan, Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, Turkey and Uzbekistan) are based on ECO Transit Transport Framework agreement.

There is no one-size-fits-all solution for corridor management mechanism for railway transport. The specific characteristics of each individual corridor have to be considered in development of efficient solution corridor coordination. However, we could argue that the management of an international railway corridor could be more efficient if it is based on clear, transparent and more permanent structures agreed by the countries involved.

The concept of structured corridor management mechanism for railway transport may have several hierarchical levels, e.g.:

- Overseeing level, as a highest level in the management structure with authority to set policies and approve all major decisions related with the realization and operation of the railway corridor (for example, a Ministerial meeting of the ministers in charge with the railway transport in the countries of the corridor);
- Executive level, that is fully in charge of the management of the activities on the international railway corridor (for example a Steering committee or Management board with appointed managers of the railways infrastructure and/or senior civil servants, with the authority to represent their government. At this level all activities according with the mandate received by the policymakers should be coordinated. This level may be supported on administrative level (e.g. Secretariate) with fully dedicated staff and dedicated contact points from the participating countries along the corridor;
- Operational level, that may be organized with various advisory and expert groups, with appointed staff of the national railway companies, and from the representatives of national border crossing authorities. Permanent and/or ad-hoc working groups or sub-working groups may be established to address specific issues such as infrastructure development and technical interoperability; operational interoperability and timetable; legal issues; commercial aspects and principles for setting tariffs; harmonization and facilitation of border crossing customs procedures and other regulatory formalities; performance management and operations, information dissemination and coordination of stakeholders; etc.

Figure 9: Concept of corridor management mechanism for railway transport



Regular consultations with representatives of the transport market, such as forwarding companies, main customers, and owners of private railway fleet is needed. The consultation under corridor management mechanism could be organized at all levels of corridor coordination to examine the relevance of on-going issues and provide the feedback of the market on the operational performance of the railway corridor.

Transparent a comprehensive information on conditions for use of railways transport services along the international corridor and connected routes has to be easily available to all interested parties. That may include a specialized corridor website where structured periodical reports are available and regularly updated; detailed information on infrastructure of the corridor and connected routes are provided; railway transport services are identified along with intermodal linkages and other related logistics services available; tariff calculator by route and overview of other fees and charges, as well as documentary requirements are listed; detailed booking information are provided; linkages to railways and other service providers are given.

Read: Learn more about railway corridor coordination and corridor management mechanisms from:

- ESCAP, **Developing Coordination and Institutional Arrangements for the Management of Intermodal Transport Corridors in the ESCAP Region** (2019)
- ESCAP, **Learning Material on Transport Corridors** (2020)
- COMCEC, **Governance of Transport Corridors in OIC Member States: Challenges, Cases and Policy Lessons** (2018)
- European Commission, **European Rail Network for Competitive Freight**

Note Please share your views on the following:

- What is present experience in corridor coordination along China-Mongolia-Russian Federation Economic Corridor for railway transport?
- What are the potential and challenges to improve coordination with introduction of more structured corridor management mechanism?

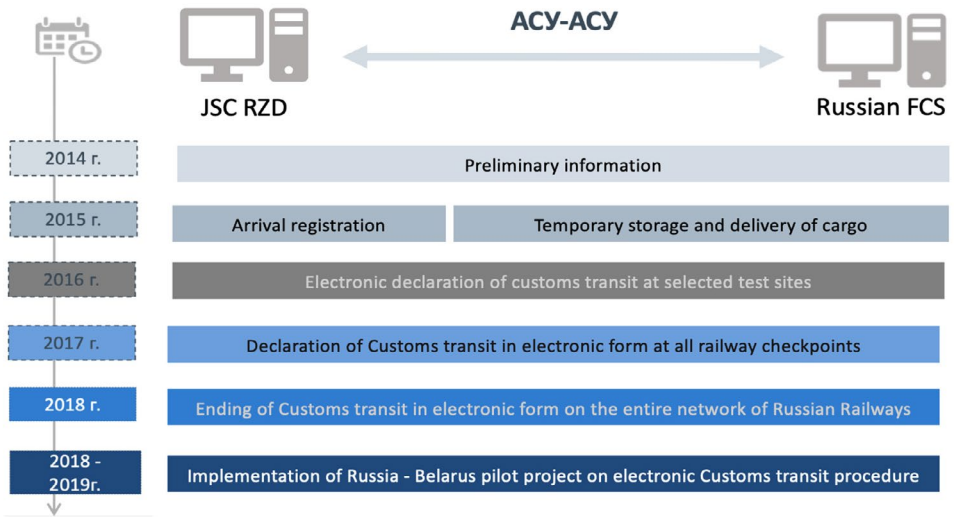
Case Study Electronic information exchange between railways and Customs in Russian Federation and INTERTRAN Project

The objective of the case study is to discuss how enhanced digitalization and use of electronic information exchange between railways and Customs could increase efficiency of processes at border crossing by rail. The participants will be invited to discuss and elaborate on their views on the potential for increased electronic information exchange along China-Mongolia-Russian Federation Economic Corridor.

Background information

The JSC Russian Railways (RZD) currently successfully implements information systems that provide linkages and electronic information exchange between JSC RZD and Federal Customs Service (FCS) of Russian Federation. The work on electronic information interaction between JSC RZD and FCS of Russian Federation started with signing of the agreement in 2004, and it was continually upgraded and operationalized in following years. Latest developments in electronic information interaction are focused on end-to-end paperless technology for railway transportation in international traffic using electronic documents.

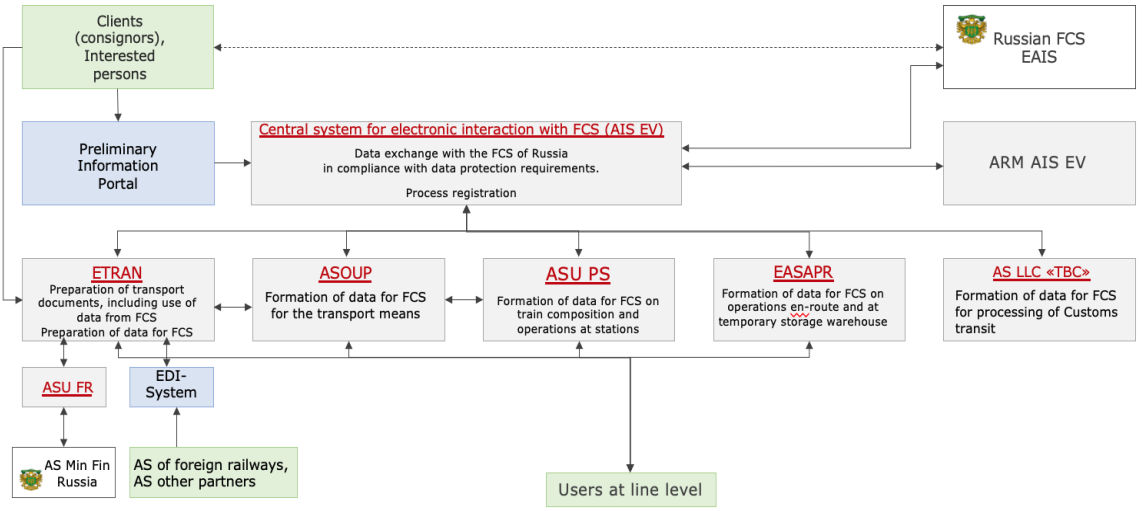
Figure 10: Electronic information interaction between FCS of Russia and JSC RZD(latest paperless technology developments)



Source: Adapted from RZD Presentation, September 2019, Y.Surodin, Current state and prospects for the development of paperless technologies for the transportation of goods in JSC "Russian Railways"

The JSC RZD exchanges electronic data and documents with the single automated information system of FCS of Russian Federation (EAIS) through an automated information system of electronic interaction (AIS EV) as shown in the Figure 11 below. The AIS EV provides data protection and security, as well as authentication methods that include use of electronic signature. The system maintains databases on sent and received messages and offers reporting and analysis tools.

Figure 11: Information flows with electronic interaction between RZD and FCS of Russia



Source: adapted from RZD Presentation (V.A.Titov); September 2015 (Gdansk); Application of information technology in cross- border movement of goods and vehicles in international rail traffic

The AIS EV is linked with several other RZD information systems and applications such as: ETRAN automated system for preparation and processing of railway transport documents; ASOUP automated system for operative transport management, ASU PS automated management system of border stations and EASAPR unified software interface for unified automated system of commercial work in the field of freight transport. The system is also linked with the portal that enables submission of advanced preliminary information to the Customs as well as with the automated system of Customs brokers (AS LLC TBC). The system for electronic interaction facilitates preparation of transport documents and generation of data for Customs authorities (e.g. reusing data from transport documents, transfer slips on departure/arrival or other relevant declarations and documents).

Lessons learnt

To enable electronic interaction the RZD and the FCS of Russian Federation had to work on complex issues of providing interoperability of their information systems. The activities for implementation of communication and data exchange in electronic form included development, test and infrastructure upgrade for electronic interaction as well as design and test of software for processing of electronic documents. Step-by-step approach has been taken with continuous expanding of the scope of interactions.

Presently the operationalization of electronic interaction between Russian railways and Customs authorities in Russian Federations supports electronic information exchange and organization of paperless Customs formalities e.g. for submission of preliminary information, registration of arrival, temporary storage and Customs transit. That contributes to reduction of time for Customs procedures at railway checkpoints and destination stations that in general is not expected take beyond two hours. Currently if the documents for the goods are submitted electronically, if they are issued without errors, the train could pass the Customs clearance formalities in 10 minutes, which proves the effectiveness of digital technologies employed.[1]

Solutions related to electronic information exchange between railways and among railways and Customs depend on technological requirements, however they require even more intensive institutional cooperation and harmonization.

Project INTERTRAN

Background information

The INTERTRAN Project on measures for effective development of intermodal transport in the Asia-Pacific region aims to increase the competitiveness of the railway transport. The project was initiated by Russian Railways (RZD) in 2017 as one of the projects under the Asia-Pacific Regional Assembly (APRA) of the International Union of Railways (UIC) project incubator. The INTERTRAN project has been since supported by international organizations such as UIC, OSJD, International Coordinating Council on Trans-Eurasian Transportation (CCTT) and ESCAP. The concept of the INTERTRAN project builds on initial ESCAP work on information technology for seamless rail-based intermodal transport services, conducted in cooperation with

1 Customs gives the go-ahead to digital technology, Interview of Ruslan Davydov, First Deputy Head of the Federal Customs Service of Russia, on digital technologies, Russian Railways magazine, 04.12.2018. Available at: *http://www.customs.ru/index.php?option=com_content&view=article&id=27040:----------l-r-04122018&catid=26:2011-01-24-14-45-21&Itemid=1830*

CCTT.[2] Wide range of stakeholders from private and public sector have been involved in development and implementation of INTERTRAN project, from Russian Federation, Japan, South Korea, China, Kazakhstan and Belarus. Prospects for expansion of the project with participation of other countries in the region and Europe are being explored.

The main initial goals of the INTERTRAN project have been to develop information technology for electronic information exchange between transportation participants involved in intermodal transport along international corridors in Asia-Pacific region, and to analyze the performance of intermodal transport using this information technology.

The INTERTRAN project aims to increase the railway transport competitiveness by:

- enabling electronic interaction between the stockholders at ports and railway stations,
- increasing the use of paperless technology by using fully electronic transport documents, introducing mobile workstations for paperless processing of related documents and optimizing railway operations at ports / departure / destination railway stations; and
- employing paperless Customs transit procedures for rail (e.g. using fully electronic transit declarations and electronic closing of Customs transit procedure).

It should be noted that several transport related documents have been already electronically processed in Russian Federation before INTERTRAN project, including commercial documents, marine bill of lading, through bill of lading, GU-12 applications for freight transportation, Customs transit declaration (with paper-based en-route copy). With the INTERTRAN project electronic processing was further expanded, and presently up to 30 railway transport documents are converted into paperless electronic format.[3]

For example, with the INTERTRAN project, the acceptance and delivery inspectors and other railway technical staff started using mobile workstations for paperless processing of notifications (e.g. GU-2B notification about completion of loading operation; GU-45uVTs wagon feeding and cleaning memo). Processing of transport documents in ETRAN system has been further expended (e.g. GU-29uVTs carriage document). Processing of fully electronic Customs transit declaration (without paper-based copy paper-

2 ESCAP, 2017, Report on Information Technology for Seamless Rail-Based Intermodal Transport Services in Northeast and Central Asia. Available at: *https://www.unescap.org/resources/information-technology-seamless-rail-based-intermodal-transport-services*

3 RZD Presentation, ESCAP and OSJD Virtual Meeting 7-8 July 2020, L. Renne, INTERTRAN

based en-route copy) and paperless electronic closing of Customs transit at destination station has been introduced.[4]

In the first phase of the INTERTRAN project (2018-2019) intermodal transport in import direction to Russian Federation was addressed. Information technology for the INTERTRAN project was developed and the pilot transportation was first tested along Yokohama Port (Japan) - Vladivostok Port (Russian Federation) - Silikatnaya station (Russian Federation) route. The transport of the first container train with electronic and paperless technologies under INTERTEAN pilot project was organized on this route in August/September 2019 in cooperation with the JSC RZD as a carrier and the transport group FESCO as a pilot operator.[5]

Multiple electronic interactions between railway, Customs and other stakeholders could be noted for the movements under INTERTRAN project. For example, at the entry Vladivostok port/station (Russian Federation) electronic transport documents are exchanged with port and railway automated systems. Customs transit procedure by rail in Russian Federation is organized on paperless manner by exchanging of electronic documents and messages at departure station (Vladivostok) and destination station (Silikatnaya) (Moscow Railway). The Customs at destination receives arrival notice in advance before arrival of the train. Upon arrival of the train at destination, the delivery of goods is electronically confirmed, electronic messages with regard to temporary storage are exchanged and the Customs transport procedure is electronically ended.

Over the one-year period, September 2019 - September 2020, the INTERTRAN technology was piloted along other routes from Vladivostok port to several other destination stations in Russian Federation reaching over 6 thousand containers in import traffic from Japan, China and Republic of Korea.

The second phase of the INTERTRAN project (2019-2020) endeavors to enable transit movements across Russian Federation to other neighboring countries. The transport of the first container train in fully digital format under INTERTEAN pilot project on the route Ningbo port (China), Vladivostok port/station (Russian Federation), Kolyadichi station (Belarus) was organized in August/September 2020 in cooperation with Russian Railways, Belarusian Railways and FESCO transport group.6

4 RZD Presentation, November 2019, K. Allakhverdyan, INTERTRAN Project of APRA UIC

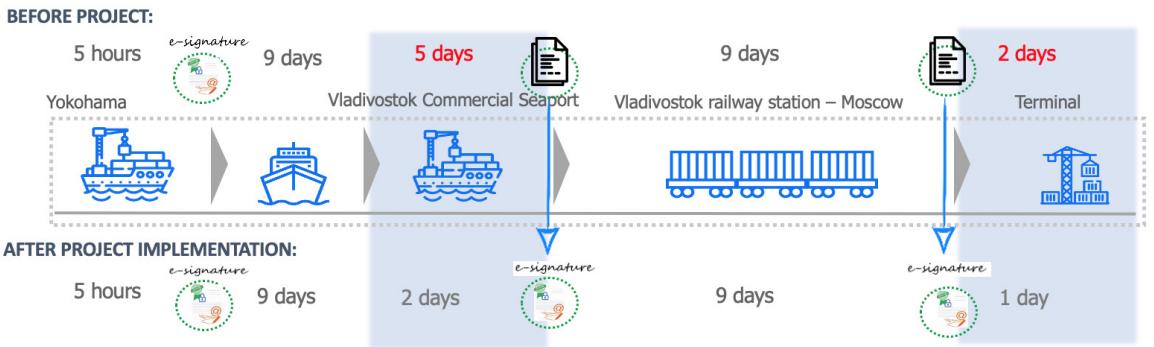
5 Gudok, 5 September 2019, I. Taranec, Digital technologies will reduce the time of formation of shipments five times. Available at: *https://gudok.ru/content/freighttrans/1476123/*

6 FESCO website news, 3 September 2020, Russian Railways, Belarusian Railway and FESCO organized the first digital transit container shipment from China to Europe. Available at: *https://www.fesco.ru/press-center/news/38810/*

Lessons learnt

The implementation of INTERTRAN pilot project on Yokohama (Japan) – Vladivostok / Moscow (Russian Federation) route has shown that with use of paperless technology in cooperation between the customers, carriers (sea and rail) and regulators (e.g. Customs) and port authorities international intermodal transportation could be more efficient and the time for cargo handling could be reduced. The time for processes at entry seaport have been reduced from 5 to 2 days and at destination terminal from 2 to 1 day, which gives about 4 days of overall time reduction.[7]

Figure 12: INTERTRAN pilot project on Yokohama - Vladivostok/Moscow route



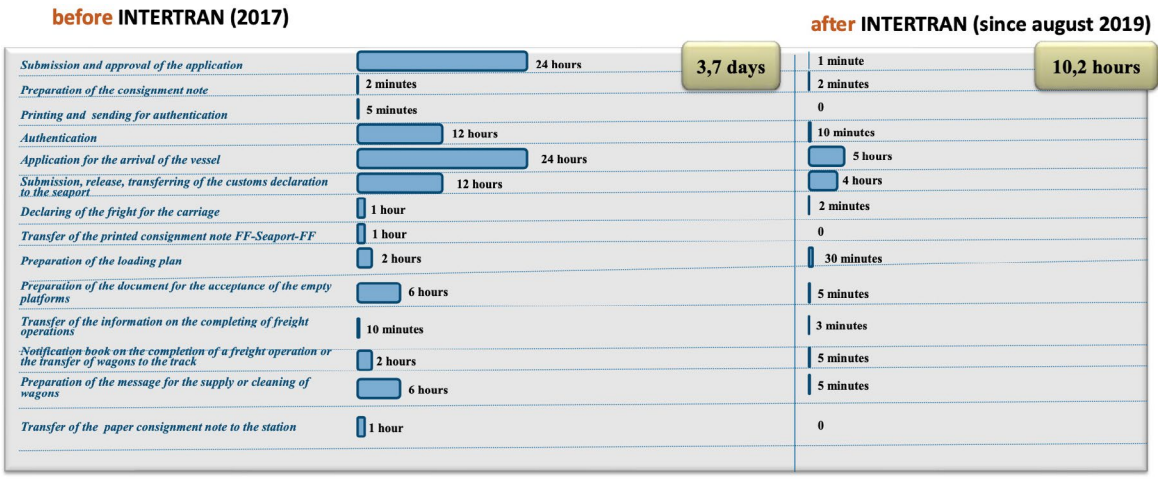
Source: RZD Presentation, November 2019, K.Allakhverdyan, INTERTRAN Project of APRA UIC

More detailed analysis shows that improved documents processing in transport operations and Customs procedures has reduced the average time from 3.7 days (before implementation of INTERTRAN in 2017) to 10.2 hours (after implementation of INTERTRAN since August 2019). Major gains have been achieved in the time for submission and approval of the application (from 24 hours to 1 minute); authentication (from 12 hours to 10 minutes); application for the arrival of the vessel (from 24 hours to 5 hours); submission, release and transferring of Customs declaration (from 12 hours to 4 hours).[8]

7 RZD Presentation, November 2019, K.Allakhverdyan, INTERTRAN Project of APRA UIC

8 RZD Presentation, ESCAP and OSJD Virtual Meeting 7-8 July 2020, L. Renne, INTERTRAN

Figure 13: Average time reduction due to document processing improvements



Source: RZD Presentation, ESCAP and OSJD Virtual Meeting 7-8 July 2020, L. Renne, INTERTRAN

The INTERTRAN project has shown that with electronic information exchange and use of paperless technologies for processing of transport documents and Customs transit declarations it is possible to significantly reduce the unproductive time and losses associated with the physical movements of transport documents, documentation controls and organization of Customs formalities at ports and railway stations. The INTERTEAN project created seamless environment for information exchange to ensure digitalization of business processes in railway transport, which increases the attractiveness of rail-based intermodal services.

Watch PROSTO Production Video: INTERTRAN

Case Study: Border crossing at Rezekne railway station (Latvia)

The objective of the case study is to discuss how the use of new technologies and smart solutions could support optimization in organization of border crossing processes and streamlined movement across border. The participants will be invited to discuss and elaborate on their views on the potential of using new technologies and smart solutions at border crossings along China-Mongolia-Russian Federation Economic Corridor.

Background information[9]

Latvia and Russian Federation are connected with two railway border crossings Karsava (Latvia) – Skangali (Russian Federation) and Zilupe (Latvia) – Posin (Russian Federation). The capacities of the Karsava and Zilupe border crossing stations are limited and insufficient to provide effective dealing with high volumes of freight. To prevent major bottlenecks at the railway border crossings the Latvian Government has designated the Rezekne railway station, which has more adequate capacities, to serve as a border crossing station only in relation to goods moved by freight trains from/to Karsava and Zilupe border crossings. The Rezekne border crossing station is located about 45 km from border crossing station Karsava and 60 km from border crossing station Zilupe. The freight trains do not stop at any other railway stations while moving on sections between Karsava and Rezekne or Zilupe and Rezekne.

Procedures at Karsava (Latvia) and Zilupe (Latvia) border stations

The Karsava and Zilupe border crossing stations in Latvia operate 24 hours and fully process passenger trains. At the Karsava and Zilupe border crossings there are very limited railways operations on freight trains because the processing of international railway freight transport is organized in Rezekne railway border crossing station.

For freight trains only partial border crossing formalities by the control authorities are completed at Karsava/Zilupe entry border crossing stations. In addition to immigration/passport control for drivers and staff of the freight trains the Latvian border guard authorities at the Karsava and Zilupe border crossings are authorized for radiation control and operation of the stationary radiometric gates.

At Karsava and Zilupe border crossings there are only few Customs officers present which in general only visually inspect the entry/exit of the freight trains without any processing of railways and Customs

9 ESCAP (2018), Study on Border Crossing Practices in International Railway Transport (based on ESCAP/OSJD Study visit findings in 2017)

documents. Preliminary information on freight train (submitted directly from the Russian Railways) is available in electronic form at least two hours before arrival of the train at the railway border crossing.

The Customs authorities at Karsava/Zilupe border crossings operate dynamic weight scales and dynamic X-ray scanner, which enable collection information on weight and control of the cargo when the train is moving in slow speed range at the entry of the border crossing. The weight measurements and x-ray scan images of each wagon are shared electronically with the Customs authorities at Rezekne border crossing station for risk analysis and selection of wagons for detailed physical control, if necessary.

The stop of the freight trains at the border crossings Karsava or Zilupe for completion of all entry border-crossing formalities of the border guards and Customs takes about 20-30 minutes.

Upon finalization of entry border crossing formalities, the train as well as the locomotive and the driver of the Russian Railways are allowed to continue at the Latvian railway infrastructure from the entry border station to the Rezekne border crossing station where remaining border crossing formalities will be finalized.

The movement from the entry border crossing Karsava or Zilupe to the Rezekne border crossing station does not have a status of Customs transit but represents a Customs formality for bringing the goods entered into the Customs territory to the designated border crossing Customs office.

Railway operations at Rezekne (Latvia) railway station

Before arrival of the train at the Latvian territory the Russian Railways and Latvian Railways exchange two types of information based on bilateral EDI agreement. First is the information on goods that is provided upon loading of cargo at the wagon, which can take place several days before arrival of the train (natural list). Second is the information on composition of the train (as confirmed at the exit border crossing from neighbouring country) and submitted at least 2 hours in advance, before arrival of the train at the Customs territory. The second information contains essential data such as: wagon number, weight, code of the goods; consignee of the goods and indicated time of arrival. The information is exchanged through automated railways information systems using standardized UN EDIFACT messages.

The information received from the Russian Railways is distributed by the Latvian Railways to the Latvian Customs and other government authorities at the entry railway border crossing station (e.g. Zilupe) and at the Rezekne railway station.

An automated commercial inspection system that was installed in 2015 (at location approximately 20 km before the entry to the station), supports commercial handover of the freight trains at Rezekne station. The automated system provides visual video surveillance and automated platform/wagon number recognition while the train is moving towards the Rezekne railway station. The video feed and all other information captured by the system are electronically transmitted to the Rezekne railway station. The use of the system enables expeditious commercial handover and improves the commercial inspection of wagons regarding control of load safety compliance, oversize detection and recognition of irregularities.

Commercial handover at the Rezekne railway border crossing station is organized in four steps. First step is monitoring of the freight train arrival, using the automated commercial inspection system at control room of the Rezekne station. In this stage the data on train composition (obtained in advance from electronic information exchange with the Russian Railways) is automatically matched with the platform/wagon numbers captured by the automated commercial inspection system and any discrepancies are identified; the video feeds and images received by the automated commercial inspection system are analysed (before arrival of the train at the station). The arrival of the train at the station is confirmed and commercial inspection and handover is initiated.

At the second step the paper-based documents received from the train document pouch are opened for the first time (it should be noted that documents are not opened at entry border crossing Karasava or Zilupe). The data received in advance from the electronic information exchange with the partner railways undertakings (natural list) are compared with the data from paper-based documents. The railways documents are also pared with the information on cargos selected for specialized controls (e.g. phytosanitary of veterinary inspection), which is received by fax or e-mail from border control agencies.

The third step is preparation for formalities for the principals, where Customs declaration are prepared and submitted to the Customs office in Rezekne station. The railways can act as a declarant/principal, e.g. for Customs transit declaration regarding movement from the Rezekne border crossing to the Latvian ports or any EU country (e.g. to the Customs warehouses in Estonia or Lithuania). Customs declarations are submitted in electronic form only. The railways and Customs information systems are interfaced to enable seamless exchange of information.

In 2017 the railways documents and supporting documents have been processed on paper-based manner, while the empty wagons/containers could be processed in fully paperless manner, only with exchange of electronic information. As indicated by the railways projects on further expansion of paperless

electronic document processing are ongoing.

At the fourth step a handover document is prepared using the railways IT software. Handover details are checked for the last time, the handover document is printed, signed and delivered physically to the Russian Railways at corresponding railway station. The Russian Railways in accordance with a bilateral agreement stamp the handover document and return one copy to the Latvian Railways.

It should be noted that technical inspection of the rolling stock is organized in parallel with the commercial inspection of the train. This first part of railways operations at Rezekne railway border crossing that includes all commercial and technical inspections for the handover takes up to 3 hours and 45 minutes.

Customs and other regulatory formalities at Rezekne (Latvia) railway station

Pre-arrival information submitted in electronic form by the railways to the Customs enables risk assessment before arrival of the train at the Rezekne railway border crossing station. Based on risk assessment and evaluation of the x-ray scans gathered from dynamic X-ray scanners at the entry border crossing (e.g. Zilupe) the Customs authorities select wagons for physical inspections.

The data on wagon weight received from pre-arrival information and measurements from dynamic scales at the entry border crossing (e.g. Zilupe) are automatically matched and in case of any discrepancies or uncertainties the wagons can be additionally weighed with static scales available at the Rezekne border crossing.

The pre-arrival information in electronic form is also available to other government agencies (e.g. phytosanitary of veterinary control authorities), which also use risk assessment to select the wagons for detailed physical control.

The railways have an authorized economic operator status (authorized consignor and consignee) that allows them to prepare Customs declarations by themselves and to ask for control to be performed in other railways stations if necessary. The Customs declarations are submitted through the Rail Freight Declaration System (DKDS) to the Electronic Customs Data Processing System (EMDAS) that enables electronic submission of Customs declarations and documents for Customs purposes (e.g. electronic summery declaration and Customs transit declaration). Customs declarations are processed by Customs Management Information System (CMIS), which covers several Customs functions, including risk management. Customs IT systems and interfaced Railways IT systems ensure simplified electronic data exchange between railways and Customs.

Less than 10 per cent of the goods declared at Rezekne railway border crossing station is subject to physical inspection. If needed, the wagons selected for physical inspections are shunted to dedicated side lines for Customs and other specialized controls (e.g. phytosanitary of veterinary control). At the Customs side lines unloading/loading equipment such as reach stacker is available. Physical inspections of Customs and other government agencies (e.g. phytosanitary/veterinary control authorities) are well coordinated.

Preparation and submission of necessary documents for Customs clearance takes up to 85 minutes and it is organized in parallel with railway commercial and technical inspections. The Customs inspections at Rezekne railway border crossing take in average 30 minutes.

Lessons learnt

The Case study of Rezekne railway border crossing in Latvia nearby the border with Russian Federation shows a possibility to minimize formalities at actual border station(s) (e.g. only to brief and automated initial border crossing control) and transfer the regular border crossing formalities (both railways and regulatory) to the nearest inland railway station where appropriate capacities are available.

The Rezekne railway border crossing station is an example were several good practices and smart solutions for efficient management of railway border crossing are implemented including:

- transfer of main railway operations and regulatory formalities from the entry railway border crossing(s) (with limited capacities to deal with high transport flows) to the first major railway station located inland which is designated to serve as a railway border crossing station. Such transfer eliminates bottlenecks at the entry railway border crossing(s) and provides optimized use of resources (infrastructure, technical and human);
- electronic information exchange, which includes pre arrival information, between railways as well as between railways, Customs and other government agencies;
- use of modern control and inspection technologies (e.g. dynamic scales, dynamic X-ray scanner, automated commercial inspection system) that provides expeditious, automated and improved processing and control of freight trains;
- use of risk analysis, selectivity, coordinated and joint inspections and controls at national level.

Learning Materials on Railway Transport

UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific