V. KEY ISSUES IN THE FACILITATION OF INTERNATIONAL RAIL TRANSPORT

A. Background

The TAR network shows that the existing railway lines of international importance form an unclosed circular strip, generally connecting the member countries of TAR from Southeast Asia (Viet Nam) to Northeast Asia, Central Asia, South Caucasus, West Asia and end in South Asia (Bangladesh). The open part of the circular strip is the missing links between South Asia and Southeast Asia, and between some countries of Southeast Asia. Inside the circle is the missing links between Northeast Asia and South Asia, Northeast Asia and Southeast Asia (except Viet Nam), and South Asia and Central Asia.

Member countries have been attempting to build new railway lines to complete the missing links. The ASEAN initiative on the Kunming-Singapore rail link will build three links between Northeast Asia and Southeast Asia. The Long-/Medium Term- Master Plan on Railway Network of China will provide two links between Northeast Asia and South Asia through Nepal and Pakistan. An on-going study on connectivity between South and Southeast Asia includes the railway links between the two subregions. The Plan of Afghanistan National Railway Network shows two links between South and Central Asia through Afghanistan. Construction of some sections in these plans has started. Once those initiatives or plans are fully implemented, a complete inter-connected railway network will be formed to link most countries in the region.

Theoretically, passengers and goods can be transported throughout the land-linked subregions at present except most part of Southeast Asia. However, international rail transport on this network only takes place partially in practice due to economic reason and institutional barriers. Extent of the use of railway for international transport is imbalanced in different subregions and between subregions.

Most OSJD member countries included in the TAR network, located in Northeast Asia, Central Asia and South Caucasus, operate international rail transport in a large scale under the framework of OSJD. In 2011, total volume of their international traffic reached over 256 million tonnes.47

The scale of international rail transport in other TAR member countries is smaller. In West Asia, cross-border rail traffic between the Islamic Republic of Iran and Turkey, as two member countries of OTIF, was 196,097 tonnes in 2011 and Turkey’s transit traffic through the Islamic Republic of Iran 82,340 tonnes48. In Southeast Asia, such traffic between Malaysia and Thailand is about 4-6 freight trains per month and between Lao People’s Democratic Republic and Thailand can be delivered to the border area in Lao People’s Democratic Republic. In South Asia, apart from passenger traffic between Bangladesh and India, and India and Pakistan, freight train from India can reach Bangladesh’s and Nepal’s ICDs in border areas.

In addition to the inter-subregional traffic among the OSJD member countries, rail traffic between subregions is high in the border areas between Afghanistan and Central Asia. Although railway lines are not long beyond borders in Afghanistan, Turkmenistan and Uzbekistan delivered more than 3.4 million tonnes of cargo to Afghanistan in 201149. The second active inter-subregional transport area is between the Islamic Republic of Iran/Turkey

46 Presently Afghanistan is not a member country of TAR.
47 The figure is summed up from the OSJD Bulletin of Statistical Data of Railway Transport for 2011.
48 The figures are abstracted from the presentation for the ESCAP Seminar on Promoting the Use of the Trans-Asian Railway through Improved Awareness of Commercial Requirements, held at Bangkok on 23-24 October 2012.
49 The figure is summed up from the OSJD Bulletin of Statistical Data of Railway Transport for 2011.
and Armenia/Turkmenistan with recently launched Istanbul-Tehran-Almaty container block train. Another long trans-subregional rail transport is the route of Istanbul-Tehran-Islamabad launched in 2009. The traffic between the Islamic Republic of Iran/Turkey and Pakistan was 2,552 tonnes in 2011\textsuperscript{50}.

The above situation of railway operations in the region indicates that non-member countries of OSJD and/or OTIF, mainly in South and Southeast Asia, have much less use of railways for international transport. Those countries’ railways face more difficulties in international operations than member countries of the two organizations even if their railway lines are connected. The two subregions are relatively independent in railway operations with different operational rules, technical standards, contractual basis of transport, transport documents and inter-country arrangements. This will pose the largest challenge after completion of physical connections with neighbouring countries and in the future operations of the entire regional railway network.

B. Key challenges and possible solution to international railway transport

In general, the countries with international rail transport face some major common challenges, including:

(a) Congestion and delays at border stations, in particular at the stations with break of gauge;
(b) Lengthy procedures for crossing borders;
(c) Lack of harmonization in the documents that are required by different countries;
(d) Inspections on both sides of border crossings;
(e) Different technical standards for rolling stock, power supply, braking systems and signalling systems;
(f) Different operating rules and tariff structures;
(g) Different requirements for train drivers and crew;
(h) Incompatible or non-existent cross-border information and data transmission systems; and
(i) Lack of qualified manpower to operate cross-border trains.

In order to further develop international rail transport throughout the region, a number of key issues needs to be addressed, such as participation in international railway organizations, tackling of difficulties with break of gauge, harmonization of documents, simplification of procedures for crossing borders, and standardization of technical requirements. Some of these issues and many other challenges, such as different operating rules and tariff structures, can be addressed through participation in international railway organizations.

This section elaborates possible solutions to the key challenges mentioned above for members and associate members to consider their policy options and practical steps towards the facilitation of international rail transport.

\textsuperscript{50} The figures are abstracted from the presentation for the ESCAP Seminar on Promoting the Use of the Trans-Asian Railway through Improved Awareness of Commercial Requirements, held at Bangkok on 23-24 October 2012.
1. Participation in International Railway Organizations

The two international railway organizations, OSJD and OTIF, play a key role in coordination and organization of international rail transport among countries in Asia and Europe. As observed from the international rail traffic in the region, the member countries of the two organizations had significantly higher traffic volume than other countries. Both organizations coordinate railway laws, operating rules and key transport documents. Additionally, OSJD also coordinates policy, transit tariff, wagon use, train timetables, safety and technical standards for infrastructure and rolling stock.

With increasing regional integration and intra-regional trade as well as environmental awareness, railways will be used more for international transport. When the entire regional railway network is complete, railways will be used in a large scale for international transport. However, operational systems for railway cannot be established in a short time period. Countries need to gradually harmonize their technical standards, transport documents, operating rules, tariff structures and rules for wagon exchange.

Among the 28 member countries of the Trans-Asian Railway (TAR), 13 are the members of the OSJD and six the members of OTIF, including three member countries with dual membership. 12 countries are not members of any of the two organizations. Therefore, non-members of the international railway organizations need to participate in the activities of the international railway organizations as soon as possible and to borrow their experience in developing international rail transport and gradually prepare themselves for the future regional and inter-regional operations.

When the countries consider participation in the activities of the international railway organizations, a number of key factors may need to be considered, such as demand for transport with which organization’s member countries, neighbouring countries’ membership of the organization and the future potential for operations on the large regional network.

For examples, some potential benefits of accession to OTIF are indicated below:

The countries for accession must be guided by their economic interest in developing international rail transport. However, COTIF offers effective legal instruments to develop freight, and for those countries that are developing their networks with an international dimension, it provides compatibility with the European technical regulations.

One of OTIF’s strengths is the flexibility that implies that the substance of an accession can be adapted to the needs of the rail sector. For example in case of accession of Pakistan, interest was focused on the CIM consignment note, which will enable Pakistan to develop trade links with surrounding countries that apply OTIF law. However, as the tracks in Pakistan and adjoining countries have different gauges, technical collaboration on Appendices F and G of COTIF are not of great interest for Pakistan at the moment.

COTIF therefore allows the implementation of “law interface”, which provides the Member States with the opportunity to make their various railway laws compatible so that international traffic can be developed.

Further, COTIF can embrace countries whose structures are very different in terms of technology and the degree of openness to competition. For example, the technical rules of OTIF provide real compatibility with the networks of the European Union. Nevertheless, this does not mean that the structural reforms underway in the European Union, such as the separation of infrastructure managers and railway undertakings, have to be adopted. In other words, there is no specific profile for countries that are interested in acceding to COTIF.

2. Subregional and Bilateral agreements

While participation in international conventions is desirable for promoting rail transport, the role of bilateral and subregional agreements in furthering international rail transport is equally important. These agreements can be stepping stones for countries to expand their railway transport from national to subregional and regional level depending on
the development of trade and transport. Already a number of such agreements are in existence. For example, in south Asia and southeast Asia where most countries are not members of any major international railway organisation, the institutional arrangements for cross-border railway transport are mostly formalised by means of bilateral agreements. The contents of these agreements vary depending upon the requirements of the contracting parties.

In addition, member countries of Economic Cooperation Organisation (ECO) have entered into Transit Transport Framework Agreement (TTFA). Annex III of the TTFA provides for minimum technical characteristics of the railway transport to be used by transit traffic. Similarly, Protocol 6 on Railway Border and Interchange Stations to the ASEAN Framework Agreement on the Facilitation of Goods in Transit, 1998 provides for cooperation among the railways in ASEAN countries. In south Asia, also, South Asian Association for Regional Cooperation (SAARC) member countries are in the process of finalising a regional railway agreement with main objective to strengthen the regional connectivity over land that will promote regional economic integration.

Coupled with participation in international organisations, these agreements provide a practical way for countries to expand the cross-border railway transport and therefore need to be supported and encouraged. A model bilateral/subregional agreement covering essential requirements to facilitate railway transport can be developed by ESCAP and shared with member countries on basis of which they can plan, develop and implement such agreements to support railway transport in the region.

3. Issues of Break of Gauge

The main railway lines in the TAR network incorporate five different track gauges, i.e. 1,676 mm, 1,520 mm, 1,435 mm, 1,067 mm and 1,000 mm. Different track gauges prevent continued movement of rolling stock across border. It is often considered as a physical obstacle to the smooth flow of traffic. In fact, it is also an issue of transport facilitation. Long delay for passenger and freight transport has been observed at the border crossings with break of gauge. Partly the delay is caused by trans-loading of goods or bogie change at border crossings and partly by inordinate organization of transshipment.

A number of technical solutions exist to reduce its effect on the efficiency of rail services. These solutions include transhipment, bogie changing, the use of wagons with ‘variable-gauge’ bogies, provision of dual gauge and conversion of different track gauges to a single gauge standard:

(i) Transhipment/transfer is the transfer of freight by manual or mechanical means from wagons of one gauge to wagons of another gauge directly or indirectly through platform, yard, storage or warehouse, or the transfer of passengers from one train to another train.

(ii) Bogie changing is the operation by which wagons are lifted on a set of jacks, bogies of one gauge rolled out and bogies of the other gauge rolled in.

(iii) Use of wagons with ‘variable-gauge’ bogies enables wagons to be pulled along a special transition track at reduced speed. During the process, the distance between wheels is adjusted from one track gauge to another.

(iv) Provision of two different track gauges is made on a single track foundation through the insertion of a third rail (or sometimes a fourth rail to obtain the so-called ‘composite gauge’).

(v) Conversion of tracks of different gauges to a single gauge standard is to build or re-build tracks in the same standard.

The use of the solutions (i), (iv) and (v) is seen for both passenger and cargo transport. The solutions (ii) and (iii) are mainly used for passenger transport.

While continuity of gauge along all routes of the TAR would be ideal, a break-of-gauge does not constitute a major problem to efficient services. In fact, it has been observed that the time for passport control over passengers is longer than the time for bogie change at
some border crossings. With limited exception, break-of-gauges occur mostly at border crossings where a range of operations already require trains to stop. These operations are requirements of railways (e.g. change of locomotives, change of crew, technical inspection for acceptance of wagons, safety inspection for dangerous goods) and the requirements of other control agencies (e.g. Customs, immigration, security checks, sanitary inspection). Well-designed facilities and well-organized procedures allow for transshipment to take place within the time allocated for these other operations.

The Efficient Cross-border Transport Models published by ESCAP sum up some good practices in organizing efficient transshipment at border crossings with break of gauge. Based on the concepts of the Models, countries may streamline their formalities and procedures for crossing borders.

Another ESCAP transport facilitation tool, the Model on Integrated Controls at Border Crossings, may help countries reduce control time with combined use of new technologies while enhancing effectiveness of control measures.

4. Harmonization of consignment note

Consignment note is the most important document for rail transport. In the past two main railway consignment notes were used, i.e., SMGS for OSJD members and CIM for OTIF members.

The Common CIM/SMGS Consignment Note was introduced in 2006. It was reported that more than half of the international traffic associated with re-issuance of documents under either SMGS or CIM was carried through the use of the common consignment note\(^{51}\). So far, seven TAR countries are using the common consignment. In addition, China started trial use of it for transport of goods to Europe in 2012.

There is a trend that the use of the common consignment note will be further expanded to all international rail transport among the member countries of OSJD and OTIF. Other TAR member countries may not formally use the common consignment note before their accession to either of the two organizations, or their railway lines are not connected with the member countries of the two organizations at present. However, as foreseen from the development trend, their railways lines will be linked to the entire regional network and their rail transport will increase in the short or medium term. Those countries may consider to gradually aligning their consignment notes with the common consignment note to improve the current documents and avoid the future possible difficulties in change.

5. Use of Advance Passenger/Cargo Information System

Delays of trains at border crossings are mostly caused by significant time required by control authorities, such as Customs, immigration and quarantine, to process and clear documents and inspect goods. According to the survey made by OSJD, 34.5 per cent of time of international trains was spent for border crossing formalities and 11 per cent for correction of wrong translation of documents. Such unnecessary delays can be substantially reduced with the use of advance passenger/cargo information system.

Advance passenger/cargo information system has been employed in international air and maritime transport for years. However, the use of this system is limited in international rail transport. Its use can be an important step for railway to develop efficient international transport and compete with other modes of transport.

Adoption of common standard is crucially important in applying advance passenger/cargo information system in countries. International organizations, together with member countries, may assist in developing such standard and testing its application in some

countries. Compatibility of the standard with that for maritime transport needs to be considered sufficiently to facilitate maritime-railway intermodal transport to fully use the common advantage of the two modes of transport in transport capacity.

6. Standardization of Railway Infrastructure and Rolling Stocks

Safe and efficient operation of railway requires high level of standardization of infrastructure, rolling stock, signalling system, clearance space of structure, axle weight of track and communication system etc.

Currently, railway infrastructure and rolling stocks are not standardized in many countries. It has caused difficulties in cross-border transport. Apart from different track gauges, difference in braking systems prevents cross-border operations of trains in some countries. In other cases, different standards on axle weight of track cause entry of part of one country’s train to another country.

UIC plays an important role in railway standardization. So far, 18 of the 28 TAR member countries are also members of UIC. Participation in the activities of UIC may assist member countries to move towards standardization of railway.

Member countries may make particular studies to identify gaps between the existing railway systems and the standards. Based on the findings from the studies, national plans may be formulated to standardize their railway systems step by step in new construction or upgrading of railway systems.

7. Coordination of regulatory controls and railway inspections at interchange stations

Border crossing times can be substantially reduced if customs and other formalities required for train operations can be completed expeditiously. Normally the trains have to undergo Customs controls including inspections, security checks, immigration clearance, and sanitary inspection at the border crossings. In addition, change of locomotive, change of crew, technical inspection of acceptance of wagons and in case of dangerous goods safety inspection is required at the interchange stations. These operations stand alone can be a source of delay and left uncoordinated can compound the delays. Therefore, there is a need for cooperation among the agencies at the interchange stations including railways on the required inspections and controls for smooth cross-border operations of the train.

Standard time can be established for various operations at each border point where inspections take place and some of the operations can be carried out simultaneously. For example, at the interchange stations with no break-of-gauge and no change in waybill, the customs controls should be undertaken within the time needed for other essential operation such as locomotive change. By standardizing and completing the required and unrelated operations in parallel, overall time for clearances at the border can be substantially reduced. This will increase predictability and reliability of freight train services that is crucial to customers.

Annex 9 to the Convention of Harmonisation of Frontier control of Goods provides guiding principles for countries to cooperation for facilitation of international railway transport. The Annex provides for minimum requirements for the interchange stations, joint controls, reducing time and paper required for executing control requirements. It is suggested that countries in the region accede to the convention, if not already done and make efforts to implement relevant provisions that will smoothen border crossing process for railway transport.

One of the important challenges control agencies normally customs face especially with respect to container trains is the inspection of containers. Here, X-ray machines, mobile scanners can be used to have a first stage inspection and if further examination is indicated, such containers can be shifted and taken to examination area. Use of electronic seals on containers can also give real time alert to the control authorities against any tampering of seal.
In addition, customs controls should be undertaken at either origin or destination and during transit exceptionally, when there is a reliable intelligence with control authorities to do so.

8. Arrangement for exchange of Wagons

One of the potent ways to increase international railway transport in the region is to have an arrangement for exchange of wagons among the railway organizations. The contents of various bilateral agreements on railway cooperation in existence reveal that provisions on wagons exchange are integral part of these agreements. The issues covered include detention charges, wagon deficiencies, liabilities in case of accident, and operation of the wagons.

Keeping this in view, a common contract on the use of wagons in national and international transport can serve as basis for standardization of various conditions that can make wagons interoperable on different networks. The contract can cover such aspect as requirements for technical admission and maintenance of wagons, the obligations and rights of accepting railway including the right of refusal, the procedure for ascertainment and handling of damage to wagons in custody of accepting railway and also provide for liability for damage or loss to wagons. Such a multilateral contractual framework can obviate the need for parties to negotiate numerous bilateral agreements for exchange of wagons, while providing interoperability of wagons.

Moreover, this will increase the availability of wagons for international freight movement as well as encourage private wagon manufacturers to augment the supply of wagons. Already some countries in the region have arrangements to encourage private players by schemes such as Wagon Leasing Scheme of the Indian Railways that has objective to develop wagon leasing market by encouraging third party leasing of wagons.

9. Use of new technologies in train operations as well as in container tracking

International freight is growing faster and is estimated to double by 2020. Handling such an increase in cargo by railway transport operators, logistics service providers effectively and efficiently poses enormous challenges for them and makes it imperative for them to use new and extant technologies in such operations. Use of satellite positioning systems, radio frequency identification, cellular communication systems and other information and communication technologies are already being used in various railway operations and needs to be encouraged with innovative and cost effective solutions for efficient cross-border operations of railways.

As an example, proper sequencing of wagons is essential for effective delivery of cargo and incorrect order can lead to coupling and decoupling operations wasting time and resources to correct the configuration of train, it can also create problems for customers to track their cargo and is especially challenging for time sensitive cargo. To properly sequence the wagons at transshipment or intermodal terminals, solutions have been developed, where by an active RFID chip is embedded in the railway wagon so that it can transmit its location to RFID reader that supplies the information to central database. This centralized information about the location of railway wagons provide real time information and decision support to railway yard employees and managers. The automatic sequencing of wagons reduces the costly transport mistakes and in addition once the wagon is tagged the rail manager can log the information in the system, confirm train’s route and provide precisely the delivery date the arrival of wagon.

This is one example where use of technology can reduce time for train sequencing and increase the predictability of supply chain. Similarly, tracing and tracking of containers by train operators helps to them to schedule container block train, increase asset utilization, reducing dwell time and overheads. The railway of Islamic Republic of Iran is using global positioning system (GPS) to track containers to ensure their smooth movement.
10. Developing human resources for cross border railway operations

i. Visa for crew and drivers- The cross border movement of trains will require railway officials of one country moving to and from another for various railway operations. Establishment of simplified visa procedures especially for crew and drivers will ensure certainty about their availability and help railway managers to plan and ensure reliability in train schedules. One year multiple entry visas on reciprocal basis is suggested as is provided in many bilateral agreements.

ii. Training for railway officials

a. Common system for training of drivers- having a common rules or regulations can facilitate interoperability of drivers. A mutually recognised authorisation/certification may be issued by national railway that is acceptable to other railways in the region based on pre-agreed common training to the drivers. This will ensure that the driver is aware of the route he is operating including speed restrictions, signalling systems, emergency procedure enroute.

b. Railway training institutes in the region- UIC is developing Asian Network of Rail Training Centres (ANRTC) for exchange of best practices and benchmarking of activities. Currently Asian Institute of Transport Development provides capacity building including training to railway officials of various countries in the region.

iii. Regulation on service conditions and facilities for railway officials serving on cross-border routes – This will include stipulating minimum working hours, rest needed before train operations and crew rest rooms.