
Economic and Social Commission for Asia and the Pacific
Working Group on the Trans-Asian Railway Network

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Item 5 of the provisional agenda*

Policies and issues related to the development and operationalization of the Trans-Asian Railway network

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Note by the secretariat

Summary

Promoting railway transport has become imperative in dealing with the negative externalities of transport and implementing the 2030 Agenda for Sustainable Development. The Trans-Asian Railway network has a central role to play in revitalizing international railway transport in the region and beyond.

Against this background, the present document includes a stock-taking of the recent developments along the Trans-Asian Railway network, highlighting remaining challenges and identifying a path forward for the network to become more effective in supporting regional cooperation and integration with a view to fostering sustainable development. It also includes a review of some of the emerging policies and issues relating to the development and operationalization of the network.

The Working Group on the Trans-Asian Railway Network may wish to discuss actions aimed at strengthening the network and enhancing its operational readiness. The Working Group may also wish to provide further information on perspectives and challenges in developing and operationalizing the Trans-Asian Railway network, as well as offer guidance to the secretariat on its future activities in this area.

I. Introduction

1. The rapid economic growth that many countries in Asia and the Pacific have experienced over the past few decades is closely related to the improved transport connectivity within and among the countries. The Economic and Social Commission for Asia and the Pacific (ESCAP) played a leading role in setting up a regional transport network to support the increasing intraregional trade among the countries of the region. Working together with the member States, ESCAP identified the road and railway routes as well as the dry ports of regional importance and formalized them through the Intergovernmental Agreements on the Asian Highway Network, the Trans-Asian Railway Network and Dry Ports. These networks have provided a foundation for

* ESCAP/TARN/WG/2019/L.1.

enhancing transport connectivity and fostering regional economic cooperation and integration.

2. The three Agreements form the building blocks for realizing the vision of an international integrated intermodal transport system for the region, as articulated in the Busan Declaration on Transport Development in Asia and the Pacific, which was adopted by the Ministerial Conference on Transport in 2006 (E/ESCAP/63/13, chap. V). This vision was later reaffirmed in the Ministerial Declaration on Transport Development in Asia and the Pacific, which was adopted at the Ministerial Conference on Transport, held in Bangkok in 2012 (E/ESCAP/MCT.2/13). Enabling integrated intermodal transport systems requires a paradigm shift in policies and approaches hitherto pursued. The competitive strengths of each mode of transport need to be fully harnessed through increased integration of the modes of transport in order to meet increasing demands for mobility in a sustainable manner. This fact was recognized by the General Assembly in its resolution 72/212 on strengthening the links between all modes of transport to achieve the Sustainable Development Goals.

3. According to *ITF Transport Outlook 2019*, published by the International Transport Forum of the Organization for Economic Cooperation and Development, it is estimated that at the current rate, global freight demand will triple between 2015 and 2050 and the bulk of this growth will take place in Asia. With such colossal growth in freight transport volumes, it would no longer be advisable to continue business as usual. The increasing volume of freight can no longer be transported disproportionately by road without adversely affecting transport sustainability. Congestion on the roads is already on the rise, and its potential to lead to unacceptable levels of air pollution and accidents is a matter of concern for every country in the region. With the negative externalities of road transport becoming so evident, more environmentally friendly modes of transport such as railway and waterborne transport are receiving increased attention from policymakers.

4. Railway transport is particularly suited to help to meet the increasing demand for freight transportation in a sustainable manner. Acknowledging railways as environmentally friendly and energy efficient, many countries in the region have set forth plans and are investing heavily in the construction of new railway lines and taking measures to enhance the efficiency of railway transport. These initiatives need to be encouraged and supported by the international community to achieve the enhanced sustainability of transport that is vital to the realization of the 2030 Agenda for Sustainable Development.

5. The Trans-Asian Railway network has a pivotal role to play in fostering the resurgence of railways in the region. In 2006, the network was formalized through the Intergovernmental Agreement on the Trans-Asian Railway Network, which entered into force in June 2009. The Agreement has 20 parties, the latest being Turkey. The Government of Turkey deposited its instrument of accession on 11 June 2019 and the country became a party to the Agreement in September 2019. The network, which is spread over 28 member countries and comprises approximately 118,000 km of railway lines, plays a critical role in enhancing intraregional and interregional transport connectivity while strengthening the transport linkages of landlocked developing countries. The increasing number of freight trains being operated along the northern corridor of the network is a testament to its operational readiness.

6. Despite undeniable progress on the northern corridor, the overall operational levels along the Trans-Asian Railway network need considerable improvement. In addition to constructing missing links, rehabilitating weaker

sections and modernizing rolling stock, all of which require considerable investments, the railways of the region need to focus on operational issues to harness the full potential of the network. These include strengthening port-hinterland connections through the use of new technologies; locating intermodal and logistics facilities appropriately for the bundling of cargo to capitalize on the competitive strength of railway transport; encouraging electronic information exchange between railways as well other stakeholders for the efficient completion of regulatory and operational requirements; and harmonizing border crossing formalities for rail transport.

7. Efficiently operationalizing integrated intermodal transport is a long-term task for the region, requiring concerted efforts at multiple levels. Despite the magnitude of the task, the benefits are immense and include enhancing the sustainability of transport by mitigating its negative externalities, which have taken an ominous turn. Enhanced competitiveness of railway transport would be the centrepiece of all these endeavours. The present document contains information on policies and issues requiring coordinated action by member countries to further enhance the effectiveness of the Trans-Asian Railway network in fostering sustainable transport in the region.

II. Decisions and recommendations of the Commission and its subsidiary bodies

8. Since the Intergovernmental Agreement on the Trans-Asian Railway Network entered into force, issues related to its further development and operationalization have been prioritized at high-level meetings, as summarized in the annex to the present document. In addition, issues related to the efficient operation of freight trains along the network have received heightened attention from development partners and have been discussed at recent meeting and events.

9. These meetings and events include the following: the 21st meeting of the Special Working Group on the Singapore-Kunming Rail Link project, held in Vientiane in September 2019; the 23rd meeting of the Greater Mekong Subregion Subregional Transport Forum, held in Bangkok in August 2019; the 28th meeting of the Association of Southeast Asian Nations (ASEAN) Land Transport Working Group, held in Bangkok in August 2019; the 14th meeting of the heads of railway authorities of the Economic Cooperation Organization member States, held in Dushanbe in June 2019; the 4th meeting of the Railway Working Group of the Central Asia Regional Economic Cooperation Programme, held in Tashkent in April 2019; the inception meeting for the study project on the commercialization of the railway corridor between Kazakhstan, Turkmenistan and the Islamic Republic of Iran, held in Tehran in April 2019; the eleventh International Freight Conference of the Organization for Cooperation between Railways, held in Tehran in October 2018; and a capacity-building workshop on the facilitation of international railway transport to support intraregional and interregional trade, held in Bangkok in December 2018.

10. The relevant meetings of the Commission and its subsidiary bodies held in 2018 and 2019 included the seventy-fourth and seventy-fifth sessions of the Commission (May 2018 and 2019) and the fifth session of the Committee on Transport (November 2018). These meetings underlined the critical role of the Trans-Asian Railway network in fostering sustainable transport to support the realization of the 2030 Agenda by enabling an integrated, intermodal transport system that harnesses the competitive advantage of the railways in providing an environmentally friendly and energy-efficient mode of transport among

member countries. Selected relevant excerpts from the reports of these meetings are contained in the annex to the present document.

III. Recent developments along the Trans-Asian Railway network

11. Freight volumes along the northern corridor of Trans-Asian Railway network continue to grow. The container volumes transported along the China-Europe corridor by the United Transport and Logistics Company – Eurasian Rail Alliance, a major operator of container trains, reportedly increased by 280 per cent, with the number of containers increasing from 100,500 in 2016 to 280,500 in 2018. The joint stock company runs 15 trains daily with an average transit time of 5.5 days between the European Union and the western border of China.¹

12. Furthermore, intermodal transport is being used to enhance the capacity utilization of the network's northern corridor. In June 2019, the first container was shipped by sea from Busan, Republic of Korea, to Vladivostok, Russian Federation, then to Brest, Belarus, on the Tran-Siberian Railway. From there, it was trans-shipped to 1,435 mm gauge railway track and delivered to the railway station in Brzeg Dolny, Poland. Final delivery was made in Wroclaw, Poland, with the entire journey taking 21 days, or half the time that it takes by sea.²

13. Apart from the northern corridor, other routes through Central Asia are increasingly becoming prominent. In most countries in Central Asia, measures are being taken to facilitate railway transit. The completion of the Baku-Tbilisi-Kars railway line in October 2017 opened a new railway transit route to connect the countries of Europe with Azerbaijan, Georgia, Turkey and Central Asia. It is estimated that the line could eventually transport 3 million passengers and 17 million tons of cargo annually.³

14. The opening of the Qazvin-Rasht railway line in March 2019, a missing link in the Trans-Asian Railway network located in the Islamic Republic of Iran, is another notable project with wider implications for regional connectivity that has been completed recently. The newly constructed railway line is part of the International North-South Transport Corridor; now, the only missing link is between Rasht and Astara, in the Islamic Republic of Iran. Once that link is completed, South Asia could be connected to Europe through the railways of Azerbaijan, the Islamic Republic of Iran and the Russian Federation.

15. Many of the railway routes identified by the Economic Cooperation Organization are also part of the Trans-Asian Railway network, including the Istanbul-Tehran-Islamabad route, the Almaty-Istanbul route and the Almaty-Bandar Abbas route. High-level working groups have been established under the auspices of the Economic Cooperation Organization, meeting periodically to discuss issues related to commercial and other aspects for the efficient operation of container trains along these railway routes. Further initiatives on

¹ See United Transport and Logistics Company – Eurasian Rail Alliance, “UTLC Eurasian Rail Alliance”. Available at <https://utlc.com/en/> (accessed on 27 September 2019).

² Russian Federation, “Russian Railways Holding and FESCO expand Trans-Siberian LandBridge geography and launch transit service from Korea to Europe via Trans-Sib”, Russian Railways, 26 July 2019.

³ See <https://ady.az/en/read/index/8/43>.

these routes were discussed at the 14th meeting of the heads of railway authorities of the Economic Cooperation Organization member States, held in Dushanbe in June 2019.

16. Along the southern route of the Trans-Asian Railway network, in South Asia, a trial run of an India-Bangladesh container train took place in April 2018. The container train, carrying 60 twenty-foot equivalent units (TEUs) with approximately 1,200 tons of de-oiled cake, departed from the Majerhat container terminal in India bound for the Bangabandhu Bridge West station, 117 km from Dhaka.⁴ Regular container services between the two countries would reduce both the time and cost of transportation.

17. In South-East Asia, the Singapore-Kunming Rail Link project is a major initiative that aims to connect the railway networks of the countries in the subregion. Malaysia is the permanent chair of the Special Working Group on the Singapore-Kunming Rail Link project constituted to monitor this rail link under the oversight of the ASEAN secretariat. The Special Working Group has held 21 meetings. At the most recent meeting, held in Vientiane in September 2019, updates were provided on some of the missing links in the Trans-Asian Railway network that were located in these countries.

18. In Cambodia, the missing link in the Trans-Asian Railway network is the Bat Deng-Snoul-Loc Ninh section (Cambodia-Viet Nam). The feasibility study for the 258 km line has been completed, and the funding requirement to build the railway line is estimated at \$1.4 billion. International investment in this railway project is being sought in Cambodia. Another important missing link on the Trans-Asian railway network that would connect the Lao People's Democratic Republic with China (Boten-Vientiane) is under construction and expected to be operational by 2022. The 414 km standard gauge line is being built with support from corporations in China at a cost of \$5.8 billion.

19. For the missing links in the Trans-Asian Railway network in Myanmar, the progress has been slow. A request has been made for a feasibility study to be conducted in India with regard to the Tamu-Kalay-Mandalay railway line, and in China, a feasibility study along the Muse-Mandalay is under way. In China, the missing links in the Trans-Asian Railway network are (a) Dali-Baoshan-Ruili, a 330 km line bordering Myanmar that is scheduled to be completed in 2021; and (b) Yuxi-Xishuangbanna-Mohan, a 508.53 km line bordering the Lao People's Democratic Republic that is also expected to be completed by 2021.

20. In Viet Nam, the missing link in the Trans-Asian Railway network is the Ho Chi Minh City-Loc Ninh route connecting Viet Nam to Cambodia. In Viet Nam, financing of \$948.6 million is currently being sought for this 129 km line. For the missing link between the Lao People's Democratic Republic and Viet Nam, along the Vientiane-Thakhaek-Mu Gia-Tan Ap-Vung Ang section, a feasibility study was completed in 2017 and a detailed design is being developed. A joint committee has been established to work on this railway project, and in February 2019, an agreement was signed between the two Governments on the construction and operation of the line. Investments are being solicited for the construction of this railway line.

⁴ South Asia Subregional Economic Cooperation, "India pilots container train to Bangladesh", 4 April 2018.

21. While railway lines are being constructed, the countries are also working on the arrangements for their efficient operation. A strategy for seamless railway operations along the Singapore-Kunming Railway Link project is being developed. For this purpose, participants agreed on a proposal for constituting an ad hoc technical committee on seamless operations at the 21st meeting of the Special Working Group, held in September 2019.

22. In addition, under the Greater Mekong subregion programme of the Asian Development Bank (ADB), a framework agreement for cross-border railway transport connectivity is being negotiated. In addition to these initiatives, the Governments of Cambodia and Thailand signed an agreement on managing traffic related to railway transport between the two countries in April 2019 and are working to start regular cross-border train operations.

23. Efforts to construct missing links along the Trans-Asian Railway network are clearly being made in Asian countries. However, this involves massive investment. National budgets alone are not enough and need to be supplemented with private investments. However, in most countries in the subregion, the private sector is relatively less developed. Even the legal frameworks for public-private partnerships in some countries are underdeveloped or non-existent.

24. Given the imperatives of sustainable development and the need to promote sustainable transport, financing railway transport is a priority for multilateral development banks and other donors. However, not all projects can be financed simultaneously. Therefore, there is a need to prioritize projects on the basis of mutually acceptable criteria and pitch them to international investors at the relevant forums. Upon request, the secretariat could assist countries in prioritizing projects and organizing an investment forum to attract investments to construct missing links along the network.

25. In addition, an increase in rail traffic along the northern corridor of the network would critically hinge on tapping into the huge volume of trade between the Republic of Korea and Japan and Europe. In this regard, multimodal transport could play an important role. Already, Russian Railways has joined hands with transport companies to launch a transit route between the Republic of Korea and Europe.

26. There is enormous potential for increased Europe-Asia rail freight on various routes along the Trans-Asian Railway network. Recent estimates by the International Union of Railways suggest that by 2030, railway cargo could increase by 810,000 TEUs.⁵ The goods carried by railway could be high-value and time-sensitive goods, such as high-tech electronics, metal products, vehicles and automotive parts/spares, and chemicals. For transportation of such goods, high transportation costs could be justified if their delivery were predictable and led to a reduction in inventory requirements for firms. However, increased container transport by railway would hinge critically on railway freight trains being economical, reliable and predictable.

IV. Initiatives by the secretariat to support efficient operations along the Trans-Asian Railway network

27. In 2015, the Commission adopted resolution 71/7 on the Regional Cooperation Framework for the Facilitation of International Railway

⁵ International Union of Railways, "Study: Eurasian rail corridors - what opportunities for freight stakeholders?", October 2017.

Transport. In the Regional Cooperation Framework, four fundamental issues and 11 areas for cooperation were identified to facilitate international railway transport in the region. The four fundamental issues are as follows: (a) standards for railway infrastructure, facilities and equipment; (b) break of gauge; (c) different legal regimes for railway transport contracts; and (d) coordination of regulatory controls and inspections at border-interchange stations.

28. The 11 areas for cooperation are as follows: (a) participation in international railway organizations; (b) formulation of subregional and bilateral agreements on the facilitation of railway transport; (c) cooperation to standardize cross-border railway operations; (d) use of advance passenger/cargo information systems; (e) arrangements for the exchange of wagons; (f) use of new technologies in train operations as well as in container tracking; (g) developing human resources for cross-border railway operations; (h) establishment of logistics centres/dry ports and maintenance hubs at or near border interchange stations, particularly along railway freight corridors; (i) simplification of the intermodal interface of railways with maritime, air and road transport; (j) promotion of the corridor approach in the facilitation of international railway transport; and (k) work towards paperless railway freight transport.

A Harmonization of rules and regulations for the facilitation of international railway transport

29. Pursuant to resolution 71/7, the secretariat executed a project on the harmonization of rules and regulations for the facilitation of international railway transport, with the financial support of the Government of the Russian Federation. Within the ambit of the project, three studies were conducted: one on border crossing practices in international railway transport,⁶ a second on enhancing interoperability for the facilitation of international railway transport,⁷ and a third on electronic exchange systems in railway freight.⁸

30. These studies were aimed at enhancing the knowledge of the railway officials in the region for efficient international railway operations along the Trans-Asian Railway network. The project culminated with a draft framework for enhancing the efficiency of railway border crossings along the Trans-Asian Railway network and beyond, developed jointly with the Organization for Cooperation between Railways.

31. In the draft framework, four issues were identified as vital to enhancing the efficiency of railway border crossings: information exchange between railways; customs and other government agency formalities; break of gauge; and measurement of the performance of railway border crossings.

32. More information on the draft framework and considerations for further action on these issues are presented in document ESCAP/TARN/WG/2019/2 on the update on matters arising from the 5th meeting of the Working Group on the Trans-Asian Railway Network.

⁶ ESCAP, *Study on Border Crossing Practices in International Railway Transport* (Bangkok, 2018).

⁷ ESCAP, *Enhancing Interoperability for Facilitation of International Railway Transport* (Bangkok, 2018).

⁸ ESCAP, *Electronic Information Exchange Systems in Rail Freight Transport* (Bangkok, 2018).

B. Commercialization of international railway corridors

33. In the Regional Cooperation Framework for the Facilitation of International Railway Transport, the promotion of the corridor approach was identified as one of the areas in which international cooperation was needed. Accordingly, the secretariat, with the financial support of the Islamic Development Bank and in partnership with the Economic Cooperation Organization, is implementing a project on the commercialization of the railway corridor among Kazakhstan, Turkmenistan and the Islamic Republic of Iran. The project aims to develop the following:

- (a) A corridor management mechanism to support efficient operations along the corridor;
- (b) An action plan for the commercialization of the corridor;
- (c) A marketing plan for the railway services along the corridor.

34. The commercialization of this railway corridor entails achieving its full market potential through, among others, the improvement of corridor infrastructure, the quality of transport services offered and flexible tariffs that could lead to a gradual expansion of the market serviced by the transport corridor. The general objectives for the railway corridor include the following: (a) improving customer orientation; (b) providing high-quality railway freight services; (c) improving capacity and harmonized standards along the railway freight corridor; (d) strengthening cooperation among railway authorities and other stakeholders; and (e) marketing the services of the railway corridor.

35. In this regard, the existing methods of managing railway corridors could yield useful insights for the corridor mechanism being developed for the Kazakhstan-Turkmenistan-Islamic Republic of Iran railway corridor. To make the Belarus-Kazakhstan-Russian Federation railway corridor commercially viable, railways of the three countries, namely Kazakhstan Railways, Russian Railways and Belarusian Railway, have formed the United Transport and Logistics Company – Eurasian Rail Alliance.

36. The company provides full services for container transportation by rail on the 1,520 mm gauge route from the Kazakhstan-China border to the Belarus-Poland border in Eastern Europe. The company coordinates the following issues among the three railways: speed and length of freight trains, reliability and timeliness of train operations, processing of documentation required for regulatory formalities and provision of competitive transport costs.

37. The success of the United Transport Logistics Company – Eurasian Rail Alliance in managing railway transit transport corridors between Asia and Europe indicates that such a model could be considered for replication along other transnational railway corridors being developed in the region to enhance commercial orientation for international railway operations.

38. Railway freight corridors are also being promoted in the European rail network as a means to enhance the competitiveness of railway freight. Regulation No. 913/2010 adopted by the Council of the European Union provides for the establishment of international rail corridors for a European rail network for competitive freight connecting at least three European Union member countries. The regulation provides for the establishment of an administrative structure for the railway corridors to enhance cooperation among all stakeholders and the harmonization of technical, operational and organizational regulations. It consists of an executive board formed by member countries and responsible for overall supervision; a management board

consisting of railway authorities and responsible for day-to-day operations; and advisory groups of railway operators and terminal owners/managers responsible to the management board. An important feature of the structure is a one-stop shop to address the needs of customers.

39. Despite existing solutions, there can be no uniform prescription for managing railway transport corridors. Each corridor needs to be studied in order to ascertain the challenges and suggest relevant solutions, as is the case with the secretariat's project on the commercialization of the Kazakhstan-Turkmenistan-Islamic Republic of Iran railway corridor. Two studies are being conducted under the project: one on enhancing freight flows along the corridor and a second on the physical and non-physical barriers along the railway corridor. On the basis of the recommendations of the studies and discussions with stakeholders, an appropriate corridor management mechanism will be suggested for formalization by the countries involved.

40. Commercial railway operations have increasingly become critical to meeting the investment needs of railways to carry out maintenance and further develop infrastructure at a time when demand for public funding outstrips the supply. Moreover, to encourage sustainable transport, it is imperative that proactive measures be taken to support railway transport, and the commercialization of railway corridors is a step in this direction.

C. Facilitating international passenger transport by rail

41. Demographic evolutions, lifestyle changes and technological advancement in railways towards more energy efficient systems will continue to increase demand for railway passenger transport. Passenger transport by rail increased by 20 per cent over the period 2011–2017. Many countries in the region are also developing high-speed or semi-high-speed railway networks to meet the growing demand for passenger transportation.

42. A study conducted by ESCAP in 2013 found that many intercountry passenger trains are in operation and new services are being launched regularly.⁹ The abundance of intercountry passenger trains in the region, and the potential for their continued growth, indicates a need for better understanding among the railway authorities of the challenges with regard to running such trains efficiently and of ways to address those challenges.

43. Some of the areas that are likely to need further study and experience-sharing among countries include the following: e-ticketing standards, timetables, advance passenger information systems, completion of regulatory formalities, joint controls for completion of border facilities, use of new technologies in the completion of immigration and border facilities, sharing of information among border agencies, and layout of border interchange stations.

44. The importance of creating the conditions necessary to facilitate fast and uncongested passenger traffic by rail in Eurasia was emphasized during the High-level Expert Group meeting on Harmonization of Rules and Regulations for Facilitation of International Railway Transport, held in Ankara on 3 and 4 May 2018.¹⁰ Moreover, at its eighty-first session, held in Geneva from 19 to 22 February 2019, the Inland Transport Committee of the Economic Commission for Europe adopted the Convention on the Facilitation of Border

⁹ ESCAP, *Monograph Series on Transport Facilitation of International Railway Transport in Asia and the Pacific* (ST/ESCAP/2681).

¹⁰ See www.unescap.org/sites/default/files/Meeting%20conclusions%20HLEGM%20Final.pdf.

Crossing Procedures for Passengers, Luggage and Load-luggage Carried in International Traffic by Rail.¹¹ The Convention is open for signature.

45. Given the rising significance of international passenger transport by railway, the secretariat has started to implement a project on supporting the efficient operation of international passenger trains along the Trans-Asian Railway network, with the financial support of the Government of the Russian Federation. The related study will make recommendations for enhanced regional and subregional collaborative mechanisms for strengthening international passenger railway transport along the Trans-Asian Railway network. A special session or expert discussion on this issue will be held in conjunction with the 6th meeting of the Working Group on the Trans-Asian Railway Network.

D. Developing a comprehensive database for the Trans-Asian Railway network

46. The availability of information on developments in railway infrastructure in member countries is often fragmented, making it challenging to have a comprehensive picture at the subregional and regional levels. Moreover, the situation is not conducive to the development of appropriate strategies to support member countries in meeting the demand for transport arising from emerging trade patterns and in prioritizing investments across corridors and across modes of transport.

47. As was mentioned in the note by the secretariat presented during the 4th meeting of the Working Group on the Trans-Asian Railway Network, updating the network in its route configuration as well as in its technical characteristics and level of traffic is imperative if member countries are to be able to take advantage of the regional railway network in planning and operationalizing national and international transport networks.¹²

48. Given the important role railway transport is going to play, it would be desirable to develop a comprehensive database for the network. The database would serve as a regional public good that could be accessed by the railways of member countries to support investment and operational decisions. It could also be used by researchers, members of academia and think tanks in developing, among others, evidence-based policies to foster railway transport in the ESCAP region and beyond.

49. The database could also be made available as a user-friendly online map or tool of the network that relevant policymakers, technicians and researchers could use. In addition, this online tool would allow a non-technical audience to benefit from intuitive data visualization, thus widening the user base. This kind of online tool also has the potential to provide a general overview of the entire network and a more detailed view at local scale, as well as key statistics. The secretariat could develop a template for information to be collected and shared with member countries in due course.

50. Although the secretariat maintains regular contact with the seats of Government, permanent representatives and railway organizations in the member States regarding issues related to the network, it would be desirable for each country to nominate a focal point to facilitate the development of the

¹¹ See ECE/TRANS/2019/18, annex.

¹² See E/ESCAP/TARN/WG(4)/3.

database and address issues related to the development and operationalization of the network.

E. Transport modelling to support evidence-based policies for strengthening the Trans-Asian Railway network

51. Transport modelling is used to understand and evaluate the influence of various external and internal factors on the development and operations of transport networks. Among others, it can be used to the following ends: (a) enhance flows (freight or passenger), identify opportunities to transfer flows from other transport means and induce new ones; (b) prioritize actions for developing the network; (c) link infrastructural and operational development with macroeconomic realities; (d) uncover hidden challenges (such as bottlenecks or capacity limits) that might appear later owing to the impact of specific factors; (e) determine optimal tariffs and transport service fees and charges; and (f) optimize overall route and corridor performance, as well as performance for specific commodities.

52. Implementing transport modelling for the Trans-Asian Railway network can help to match and prevent the possible mismatch of the capacities of various countries with regard to their transport infrastructure plans. It can also be used to identify synergies with local networks to eliminate bottlenecks and enhance the operational efficiency of rail corridors. In addition, transport modelling can be a useful tool in interactions between producers and transporters or for logistics service providers to simulate various transport routes from origin to destination and ascertain the optimal route.

53. Transport modelling for railways can clarify the implications of different parameters for freight flows. These could include trade growth, acceleration of commercial speed, improvement and digitization of border-crossing procedures, including electronic document exchange and transit subsidies.

54. Transport modelling for transit traffic in one country in particular had interesting results. It showed that improving and digitalizing services could induce more freight traffic than acceleration of speed could, and that subsidizing transit could produce more benefits owing to larger volumes of cargo. Modelling also showed that implementing these changes on the whole transit route would provide more benefits than working within the limits of one or two countries would. These results were used to inform a new railway freight transit development plan.

55. Member countries are encouraged to use transport modelling to plan and operationalize the railway networks in their country, as it could help them better understand the impact of various factors on the efficiency of railway transport networks at the subregional and regional levels. The secretariat, in consultation with the solution providers, could support interested member countries in this regard.

V. Enhancing the competitiveness of railway operations along the Trans-Asian Railway network

56. Increasing the competitiveness of railway transport is imperative if its share in overall transport is to be raised to achieve an optimal modal mix and enhance transport sustainability. Some of the policy initiatives that countries could take to further increase the competitiveness of international railway

transport along the Trans-Asian Railway network are discussed in the following sections.

A. Strengthening port-hinterland operational rail connectivity through electronic tracking systems

57. Realizing the vision of an integrated intermodal transport system at the regional level critically hinges on efficient overland interfaces among the Asian Highway network, the Trans-Asian Railway network and dry ports. In addition, the operational transport connectivity between gateway ports and dry ports needs to be further strengthened. Not only would this promote economic activity in inland areas, it would also benefit the landlocked developing countries of the region immensely. Experience suggests that most delays in transit transport occur at the gateway ports where the transport mode is changed. This modal change necessitates additional documents and the completion of regulatory formalities associated with goods.

58. In many countries, the customs formalities for transit goods can be overly complex, leading to inordinate delays at gateway ports. New technologies can play an important role in simplifying and streamlining the formalities of customs and other agencies. For example, using the concept of the Secure Cross Border Transport Model¹³ developed by the secretariat, customs authorities in India have started a pilot programme on the use of an electronic cargo tracking system to track the containers carrying third-party imports from Nepal that are transported by rail while transiting through India. This is leading to faster customs clearance and simplified procedures, including those related to trans-shipment.¹⁴ The importers can turn around containers in 14 to 21 days, leading to a reduction in demurrage payable to shipping lines.¹⁵

59. This example needs to be scaled up along railway corridors, both at national and international levels. In view of the enormous potential of such electronic cargo tracking systems, a system for tracking goods transportation using electronic navigation seals was recently initiated in the Russian Federation.¹⁶ The system, which is in the pre-test phase, is being put in place for the protection of economic interests and to leverage transit potential with a view to boosting the competitiveness of the country's transport system. Ten railway and twenty road border crossings have been selected to use this system in which electronic seals are affixed and removed by customs or transport officials.¹⁷

60. To improve the transport connectivity of landlocked developing countries, electronic tracking systems can play an important role. The use of new technologies in railway operations and in container tracking is identified as one of the 11 areas for cooperation among member countries in the Regional Cooperation Framework for the Facilitation of International Railway Transport. Such systems can be even more beneficial in situations where two

¹³ See www.unescap.org/resources/secure-cross-border-transport-model.

¹⁴ See India, Commissioner of Customs (Port), Public Notice No. 33/2018 (Kolkata, June 2018).

¹⁵ "Nepal seeks transshipment privileges at Kolkata port", *Kathmandu Post*, 12 January 2019.

¹⁶ See <https://crp.ru/en/index.html>.

¹⁷ trans.INFO, "Transit of goods through Russia only with a navigation seal. See how to get it", 26 July 2019.

or more transit countries are to be traversed. For example, if goods from the Persian Gulf ports in the Islamic Republic of Iran are destined for Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan, more than one transit country is involved.

61. Electronic seals could be affixed at gateway ports on containers destined for landlocked developing countries. The containers could be tracked in real time in transit countries by the respective customs and railway authorities. At the railway border crossings, the border officials would complete basic formalities such as inspecting the electronic seal and container from the outside. After the necessary data was entered into the software programme, the train could proceed through the transit country to the destination, where the electronic seal would be taken off.

62. Such a system can afford numerous benefits. First, as the cargo is tracked in real time by customs authorities, the guarantee required for customs transit can be substantially reduced or even eliminated. Second, physical inspections can be limited only to cases where there is prior information. Third, regulatory formalities can be simplified and streamlined to reduce transit time and costs. The secretariat has accumulated considerable expertise in electronic tracking systems through the piloting of the Secure Cross Border Transport Model in many countries and could provide technical assistance to members and associate members who have expressed an interest in establishing such systems.

B. Leveraging the role of railway terminals to boost railway transport

63. Railway terminals play a critical role in supporting railway transport. Considering that railway transport would need to increase further to support member countries in achieving modal shift, a better understanding of the structuring effects of railway terminals and of ways to enhance them to support integrated intermodal transport is required.¹⁸

64. Inland container terminals have appeared in many countries as the result of concerted efforts made by the port authorities, terminal operators and railways to effectively access and compete over the hinterlands. For example, the Container Corporation of India Ltd. has set up 51 rail-based terminals all over the country to consolidate loads and provide links with the seaports.¹⁹ Most of these railway terminals also serve as dry ports where customs clearance activities are also carried out.

65. Going forward, it would be desirable for rail-based dry ports to be underpinned by the principle of co-location, implying that they involve a railway operator that sets up the railway terminal and a logistics service provider that manages freight distribution facilities. This type of co-location project encourages specialization and enables both actors involved to focus on their core competencies. It also creates interdependency, as both the terminal

¹⁸ Railway terminals have three types of structuring effects: adjacency, accessibility and network. Adjacency is a structuring effect where the nature and level of terminal traffic influence the land use in the vicinity of the terminal. Storage of commodities such as grains, chemicals and minerals takes place adjacent to railway terminals. Accessibility implies that the user of the railway terminal is affected by the distance decay function related to frequency of its use. Network is a structuring effect wherein a set of interconnected railway terminals supports the specialization and interdependency of locations.

¹⁹ See Container Corporation of India Ltd., “Network of Concor’s terminals”, map. Available at www.concorindia.com/map.asp (accessed on 27 September 2019).

operator and the logistics service provider benefit as customers and therefore have an interest in ensuring the efficient operation of the dry port. Co-location also promotes better utilization of assets, as most intermodal assets are capital intensive and enable joint planning of facilities.

66. The network effect of the railway terminals can be enhanced when they also serve as dry ports and are located along international railway corridors. The Trans-Asian Railway network and the dry ports of international importance, both of which have been formalized through intergovernmental agreements, provide a sound basis for building interdependency among the locations.

C. Promoting railway freight transport as part of an overall logistics solution²⁰

67. The railways traditionally had captive markets in the mining sector and the movement of bulk products mainly owned by the public sector. Assured captive markets led railways to focus more on building infrastructure than on understanding the markets and the changing requirements of customers. Moreover, in many emerging and least developed countries, railways served multiple objectives, including in the social and political spheres. Therefore, most railways started to lose their commercial orientation and become more dependent on public funding, setting up a vicious cycle of underinvestment in railways.

68. Efforts to stem the falling shares of railways have been focused on improving internal processes and operations as well as underscoring the cost advantage of moving freight by railway. Improving operational efficiency is important, but this in itself cannot lead to a significant shift of freight to railways. The changing landscape of global logistics, in which several modes of transport can be used in a supply chain to minimize total logistics costs, has encouraged shippers to use such alternate modes as road and air transport, despite their having considerable negative externalities.

69. Experience reveals that while successful railways focus on operational efficiency, they take a holistic view of the supply chain to include the perspective of various stakeholders such as shippers, freight forwarders and third-party logistics providers. Railway freight is viewed as a part of overall logistics solutions to minimize the cost of transport from origin to destination. Studies and practical experience indicate that reliability, price, flexibility of service, and security are critical considerations in choosing modes of transport. For example, shippers in the time-sensitive freight category prioritize reliability above cost, given that for many containerized goods, inventory carrying costs are much higher than transport costs.

70. Therefore, railway transport needs to become competitive, efficient and reliable to be part of international supply chains. To increase the modal share of railway transport, it is also imperative to increase the freight flows on long-distance railway corridors. However, in many countries in the region, the modes of surface transport are not integrated to allow for synergies and complementarities. The fragmented networks are not able to support the rising demand for freight and changing production patterns resulting from the emergence of value chains in a sustainable manner. The lack of integrated

²⁰ This section was adapted from Bernard Aritua, *The Rail Freight Challenge for Emerging Economies: How to Regain Modal Share* (Washington, D.C., World Bank, 2019).

planning and investment in freight transport infrastructure has led to inefficiencies that have contributed to increased logistics costs.

71. The main challenge in enhancing freight flows along the railway corridors is facilitating the bundling of freight cargo. Bundling freight cargo is made possible by locating activities that generate and attract cargo in the vicinity of dry ports. Therefore, there is a need to create strategic hubs and bundle cargo to generate sufficient freight flows to allow for rail-centred logistics. This would require heightened coordination among agencies responsible for different modes of transport as well as the establishment of strategic hubs to pave the way for better-integrated transport and logistics networks.

72. Finally, for railway transport to be part of the overall logistics solution and increase its modal share, railways need to build strategic partnerships with key shippers, freight forwarders and third-party logistics providers, either through affiliated companies or other mutually acceptable arrangements. Partnering with third-party logistics providers could help to attract more customers to railways, particularly shippers. Indeed, shippers may be reluctant to manage the complexity of intermodal chains and have reservations about the reliability of railway transport but be more inclined to trust a third-party logistics provider.

73. Railways in North America attracted many customers by partnering with third-party logistics providers such as the United Parcel Service of America. In turn, these providers benefited by offering their services at a lower cost to the customers. Analysing logistics chains and understanding how railways could fit into them to offer door-to-door solutions could open a range of opportunities for railways in the region. For example, the operation of China-Europe trains offers enormous opportunities for railways to forge meaningful partnerships with various stakeholders and increase their modal share.

D. Enhancing railway safety

74. The volume of passengers and freight transported by rail has been increasing in many countries in the region. The volume of freight carried went from 6.4 trillion ton-kilometres to 6.5 trillion ton-kilometres over the period 2011–2017 for an increase of nearly 3 per cent.²¹ Similarly, the volume of passengers transported went from 2.7 trillion ton-kilometres to 3.3 trillion ton-kilometres over the same period for an increase of approximately 20 per cent. Despite heavier traffic, railway safety levels have improved, although railway accidents remain frequent in many member countries.

75. In most countries in the region, railway safety rules and standards based on national technical and operational concepts have been developed. Given the expected increase in international railway traffic, differences in railway safety principles, approaches and cultures could exacerbate challenges to efficient international railway transport. Therefore, it would be preferable to harmonize safety rules, the tasks and roles of railway safety authorities and the investigation of accidents. Furthermore, railways of the region may also wish to agree to harmonization in the following areas: (a) methods to assess safety levels and compliance with safety requirements; (b) targets to define safety

²¹ See UIC, RAIL Information System and Analyses database. Available at <https://uic.org/support-activities/statistics/> (accessed on 27 September 2019). The figures do not include Turkey.

levels in terms of acceptable risk; and (c) indicators for monitoring railway safety performance.

76. Absent this harmonization, member countries are encouraged to set up independent railway safety authorities to exchange views and harmonize decision-making criteria for railway safety. These authorities should be independent in their organization, legal structure and decision-making. The functions of national railway safety authorities may include the following: (a) licensing of railway undertakings that wish to operate passenger or freight services over the national network; (b) maintaining of rolling stock vehicle registers; (c) issuance of safety certifications for rolling stock; (d) training of train drivers and crew; (e) supervision of transport of dangerous and nuclear goods by rail; and (f) coordination with other national authorities to enhance interoperability levels.

77. In some countries, it may be preferable to have full-fledged railway regulatory authorities with larger roles and the scope to regulate other areas in addition to safety, including the following:²² (a) economic issues covering tariffs, developing competition, encouraging investment in railway infrastructure, determining access charges and ensuring non-discriminatory access; (b) environmental issues covering soil, air and noise pollution; and (c) technical issues including enhancing interoperability.

78. Regulating various aspects of railway operations should be approached carefully and be limited to issues for which regulation is essential. When deciding on issues to regulate, each railway could conduct a study to identify key areas that need regulation and set up railway regulatory authorities accordingly. Upon request, the secretariat could support countries in conducting such studies, share experience and make appropriate recommendations for developing effective and efficient railway transport within and among countries.

E. Regulating the carriage of dangerous goods by rail

79. The main features of the dangerous goods provisions for all transport modes are now developed at the global level and set out in the *Recommendations on the Transport of Dangerous Goods: Model Regulations*. These are aimed at Governments and international organizations tasked with regulating the carriage of dangerous goods. Among other things, classification, packaging, marking and documentation are covered under the *Model Regulations*.

80. The Regulations concerning the International Carriage of Dangerous Goods by Rail are published by the Intergovernmental Organization for International Carriage by Rail. In order to simplify the land transport of dangerous goods, the provisions that apply to the three land transport modes are discussed at a joint meeting, at which the parties to the European Agreement of 1957 concerning the International Carriage of Dangerous Goods by Road, the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways and the Convention concerning International Carriage by Rail, as well as international associations and interested States, are represented.

²² World Bank, *Railway Reform: Toolkit for Improving Rail Sector Performance* (Washington, D.C., 2017).

81. The further development of the Regulations concerning the International Carriage of Dangerous Goods by Rail, taking into consideration the *Model Regulations* and the principle of cooperation with the other two land transport modes, ensures that the carriage of dangerous goods functions smoothly even when there is a change of mode. Owing to rapid technical progress, the *Model Regulations* and the mode-specific regulations are revised on a continuous basis so that new dangerous products and their conditions of carriage can be taken into account as quickly as possible. These regulations are revised every two years.

82. The dangerous goods provisions for the Organization for Cooperation between Railways are set out in annex II to the Agreement concerning International Goods Traffic by Rail (SMGS). The Intergovernmental Organization for International Carriage by Rail and the Organization for Cooperation between Railways cooperate closely in order to ensure that amendments made to the Regulations concerning the International Carriage of Dangerous Goods by Rail are reproduced in annex 2 to Agreement concerning International Goods Traffic by Rail (SMGS), where possible. This is to simplify rail transport between the two legal regimes.

83. States members of ESCAP that are members of either the Organization for Cooperation between Railways or the Intergovernmental Organization for International Carriage by Rail can benefit from the legal regime for the carriage of dangerous goods as prescribed above. For other countries, it is recommended to develop regulations that are aligned with existing international regulations.

VI. Issues for consideration by the Working Group

84. In 1814, George Stephenson constructed the first steam locomotive, which led to the Industrial Revolution. Two centuries later, railways are at a critical junction in their evolution as a means of transport. The 2030 Agenda has provided a new window of opportunity to make railway transport more environmentally friendly and energy efficient. There is broad support among policymakers and political consensus on the need to invest in railways to enhance the sustainability of transport networks. It is now up to railways and the people behind them to rise to the occasion and seize this opportunity to make railways reliable and efficient, as well as a preferred mode of transport for shippers.

85. The Trans-Asian Railway network can play a pivotal role in the development of railways in the region. It can efficiently connect national railway networks to form a regional network, creating catalytic and synergetic effects on economic and social development among member countries and providing a foundational pillar for regional economic cooperation and integration. The era of the resurgence of railways has begun and could lead to increased economic activities generating more opportunities for and supporting countries in the realization of the Sustainable Development Goals.

86. Taking into consideration the information provided in the present document, the Working Group on the Trans-Asian Railway Network may wish to provide the secretariat with additional guidance on policies and approaches relating to further development and operationalization of the network through activities, particularly related to the following:

(a) Prioritizing investments in the construction of missing links along the network;

- (b) Commercializing of international railway corridors through corridor management mechanisms;
- (c) Developing a comprehensive database for the network and transport modelling for railways;
- (d) Enhancing port-hinterland railway linkages through, among others, the use of new technologies;
- (e) Promoting rail safety;
- (f) Regulating the carriage of dangerous goods.

Annex

Excerpts from the reports of meetings related to the Trans-Asian Railway network

<i>Meeting</i>	<i>Decisions and recommendations</i>
<p>Economic and Social Commission for Asia and the Pacific (ESCAP), seventy-fifth session, Bangkok 27 to 31 May 2019</p>	<p>The Commission recognized that the Intergovernmental Agreements on the Asian Highway Network, the Trans-Asian Railway Network and Dry Ports were major building blocks in the realization of the vision of an international integrated intermodal transport and logistics system for the region.^a</p> <p>With regard to railway transport, the Commission welcomed member States' initiatives to increase the volume of cross-border and transit rail transport and to establish efficient railway networks through (a) the expansion and modernization of railways, including those along the Trans-Asian Railway network; (b) the development of an intercity railway network; (c) the improvement of connections between seaports and railways; (d) the construction of dedicated railway freight corridors; and (e) the commercialization of railway corridors.^b</p> <p>The Commission reaffirmed the importance of the harmonization of rules and regulations for international railway transport to enhance technical, operational and legal interoperability and noted the request for the development of guidelines or a policy framework as well as capacity-building activities for efficient cross border railway transport to ensure continued progress in the area of railway transport.^c</p>
<p>Committee on Transport, fifth session, Bangkok, 19 to 21 November 2018</p>	<p>The Committee considered document ESCAP/CTR/2018/3 entitled "Draft framework for enhancing the efficiency of railway border crossings along the Trans-Asian Railway network and beyond".^d</p> <p>The Committee welcomed the development of the draft framework addressing inefficiencies in railway border crossing procedures along the Trans-Asian Railway network and beyond. It recalled that rail transport facilitation was crucial for increasing railways' share in the international transport of goods, which would not only facilitate intraregional trade but also help to reduce the carbon emissions of freight transport.^e</p> <p>The Committee took note of the four key areas for action, as identified in the draft framework, including (a) electronic information exchange between railways and among railways and control agencies, (b) harmonizing customs formalities for transit by rail through appropriate arrangement among the member countries, (c) dealing efficiently with the break of gauge and (d) developing comprehensive indicators and methodological tools to deal with the performance of railway border crossings. The Committee considered that a common understanding of the main issues to be addressed in those four areas would be instrumental in ironing out inefficiencies in international rail transport.^f</p> <p>The Committee underlined that the draft framework constituted a region-wide, non-binding policy guideline to assist member States</p>

Meeting

Decisions and recommendations

that wished to introduce measures and projects to facilitate railway border crossings, in particular – but not limited to – routes across the Trans-Asian Railway network. Bearing these considerations in mind, the Committee took note of the “Draft framework for enhancing the efficiency of railway border crossings along the Trans-Asian Railway network and beyond”, as contained in document ESCAP/CTR/2018/3.^g

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- ^a ESCAP/75/36, para. 158.
 - ^b ESCAP/75/36, para. 162.
 - ^c ESCAP/75/36, para. 163.
 - ^d ESCAP/CTR/2018/8, para. 26.
 - ^e ESCAP/CTR/2018/8, para. 28.
 - ^f ESCAP/CTR/2018/8, para. 29.
 - ^g ESCAP/CTR/2018/8, para. 30.