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Economic and Social Commission for Asia and the Pacific

Working Group on the Trans-Asian Railway Network

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

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Note by the secretariat

Summary

The present document highlights the work performed by the secretariat in collaboration with member States as well as policies and issues related to the Trans-Asian Railway network. The Working Group on the Trans-Asian Railway Network is invited to review the document and consider policies and approaches for: (a) promoting investment in the Trans-Asian Railway network, including intermodal interfaces; (b) creating the conditions for the development of rail-based international intermodal freight corridors; and (c) putting in place a process for providing the secretariat with updated information on priority rail infrastructure development projects at regular intervals.

I. Introduction

- 1. The Economic and Social Commission for Asia and the Pacific (ESCAP) has played a major role in bringing about a new approach by member States to include an international dimension in the planning of their transport infrastructure. This joint effort has led to the successful definition and formalization of the Asian Highway and Trans-Asian Railway networks, as well as the identification of a set of dry ports of international importance to facilitate the operationalization of the two networks and their integration with other modes.
- 2. The initiatives implemented under these programmes have enabled the region to accommodate increasing volumes of international trade on mostly existing infrastructure and have constituted a first effort towards aggregating disparate infrastructure systems into a common regional network best able to serve the region's economic integration, strengthen its future economic growth and facilitate the exchange of goods and services.

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^{*} E/ESCAP/TARN/WG(5)/L.1.

- 3. Acknowledging that attainment of these objectives is vital for the sustained economic development of the region, the Ministerial Conference on Transport held in Busan, Republic of Korea, in November 2006 adopted the Busan Declaration on Transport Development in Asia and the Pacific (E/ESCAP/63/13, chap. V), which articulated the vision of an international integrated intermodal transport and logistics system. This vision was later reiterated in the Bangkok Declaration on Transport Development in Asia adopted at the Forum of Asian Ministers of Transport, held in Bangkok in December 2009 (E/ESCAP/66/11, chap. IV), and reaffirmed in the Ministerial Declaration on Transport Development in Asia and the Pacific adopted at the Ministerial Conference on Transport, held in Bangkok in March 2012 (E/ESCAP/MCT.2/13). The latter also recognized that growth in intraregional trade could be further supported if regional transport corridors were expanded and bottlenecks removed.
- 4. Building on the activities implemented by the secretariat within the framework of these declarations, the Ministerial Conference on Transport held in Moscow in December 2016 adopted the Ministerial Declaration on Sustainable Transport Connectivity in Asia and the Pacific, which acknowledged the important role of transport and transit corridors in ensuring international cooperation for sustainable development and the need for comprehensive cooperation among all modes of transport for promoting sustainable multimodal transit corridors. The Declaration also highlighted the need to promote safe, smart and environmentally sound intermodal or multimodal transport corridors with seamless physical and operational connectivity.
- 5. While the above declarations were being discussed and adopted, the international community was also launching a number of global programmes and initiatives that are influencing the scope and implementation of transport-related activities. Most notable among these initiatives is the adoption by the General Assembly in September 2015 of resolution 70/1 entitled "Transforming our world: the 2030 Agenda for Sustainable Development", containing the Sustainable Development Goals.
- 6. The implementation of the 2030 Agenda may pose a greater challenge to the transport sector than to any other industry. Indeed, while the transport sector has been a key driver of economic development and is a provider of employment, it remains a leading contributor to greenhouse gas emissions and a major consumer of fossil fuels. This challenge is even more formidable for a region that enjoys a high birth rate and an expanding middle class with growing affluence and purchasing power that fuel an increased demand for consumer goods, in particular private vehicles.
- 7. At this early stage in the realization of the 2030 Agenda, there appears to be a broad consensus that the provision of seamless and sustainable connectivity in support of market integration and economic dynamism may offer a way forward to align the pursuit of economic growth with a wider distribution of prosperity and greater environmental protection.
- 8. The Trans-Asian Railway network has already played a pivotal role in assisting member countries in improving intercountry and interregional transport links, in particular in addressing the specific transport challenges facing landlocked and transit developing countries. In addition, its potential and operational capabilities have been tested and recognized through the launch of international commercial services along some of its routes.

- 9. However, despite undeniable progress and recognition, the Trans-Asian Railway network has not yet reached its full delivery capability due to a number of technical and operational constraints. While the need for building the missing links in the Trans-Asian Railway network, renovating existing sections and modernizing rolling stock are well-known issues that need to be addressed, increased attention must also be directed at establishing adequate connections to intermodal and logistics facilities, developing interfaces between rail and other modes of transport, in particular maritime shipping, and deploying information and communications technologies.
- 10. The vision behind the development of international intermodal corridors is that of a region that can fully realize the economic and social benefits of improved transport connectivity, while mitigating the negative externalities of the transport sector. The Trans-Asian Railway network is an important building block in the realization of this vision. The present document highlights selected policies and issues which the Working Group may consider useful in its discussion on making the network a solid basis for the development of international intermodal corridors reaching all corners of the region.

II. Decisions and recommendations of legislative bodies

- Since the Intergovernmental Agreement on the Trans-Asian Railway 11. Network entered into force on 11 June 2009, the Trans-Asian Railway network and issues related to its development and operationalization continue to receive high priority at high-level legislative meetings, as summarized in the annex to the present document. In addition, related issues have been discussed with development partners at recent meetings or events, such as the meetings of the Railway Working Group of the Central Asia Regional Economic Cooperation Programme held under the aegis of the Asian Development Bank, meetings of the heads of Economic Cooperation Organization railway authorities organized by the secretariat of that Organization, the Special Working Group on the Singapore-Kunming Rail Link project organized by the secretariat of the Association of Southeast Asian Nations, the Meeting of Chief Executives of Railways of South and South-East Asia, the 1st Asian Conference on Railway Infrastructure and Transportation organized by the Korea Railroad Research Institute and the meeting on Strengthening Railway Transport Connectivity in South and South-West Asia co-organized by ESCAP and the Organisation for Cooperation between Railways.
- 12. The legislative meetings held in 2016 included the seventy-second session of the Commission (Bangkok, 15 to 19 May 2016) and the third session of the Ministerial Conference on Transport (Moscow, 5 to 9 December 2016). The seventy-third session of the Commission will be held in Bangkok from 15 to 19 May 2017. These meetings highlight the role of the Trans-Asian Railway network in promoting integrated intermodal/multimodal transport systems that fully utilize the comparative advantages of different modes of transport in order to ensure safe, efficient, economical, competitive, socially-inclusive and environmentally-sound transport infrastructure and services as a means to achieving sustainable development. Selected relevant excerpts from the reports of those legislative meetings are contained in the annex to the present document.

III. Developing international intermodal transport corridors

A. Trans-Asian Railway status and challenges

- 13. The Trans-Asian Railway network plays a pivotal role in fostering the coordinated development of a regional rail network. This collaborative work of ESCAP culminated in the formalization of the network through the Intergovernmental Agreement on the Trans-Asian Railway Network, which entered into force in June 2009. There are now 19 parties to the Intergovernmental Agreement on the Trans-Asian Railway Network.
- 14. In accordance with the terms of the Agreement, the Working Group was established as an important forum to facilitate the implementation of the Agreement and discuss issues and to exchange information relating to the future development, upgrading and operational efficiency of rail transport in the region.
- 15. The Trans-Asian Railway network is evolutionary by nature. Indeed, as per the terms of the Agreement, the formalized network has been adopted as a coordinated plan for the development of railway lines of international importance within Asia and between Asia and neighbouring regions to facilitate regional economic integration. The Trans-Asian Railway network currently comprises 118,000 km of railway lines in 28 countries and its development has been incorporated into national plans or strategies in a number of countries.
- 16. The network is articulated around four corridors, which currently present a sharp contrast in their operational readiness. The Northern Corridor presents a high level of operational readiness owing to the existence of continuous rail infrastructure, adequate interoperability between railway organizations of neighbouring countries, even when a break-of-gauge exists at the border, and a high level of operational and technical competence.³ Since the completion of the Trans-Siberian main line, this corridor has traditionally been used for cross-border rail movements, and in recent years the introduction of more market-oriented economic policies in China and the Russian Federation has intensified its use with an increasing number of new international container-block train services being launched along the corridor every year.
- 17. Meanwhile, in the other corridors, operational readiness is hampered by one or more of the following issues: poor rail infrastructure in some of the countries traversed, rolling stock assets in insufficient number, lack of rolling stock interoperability across borders and low operational capabilities of railway organizations in some of the countries concerned. Most importantly, the absence of continuous rail infrastructure across borders remains an obvious obstacle to the development of international services in some parts of the region.
- 18. Of the 118,000 km of existing or planned railway tracks that have been selected by member countries for their current or future potential to carry international trade along the Trans-Asian Railway network, 12,400 km

United Nations, *Treaty Series*, vol. 2596, No. 46171.

The status of implementation of the Agreement is set out in document E/ESCAP/TARN/WG(5)/1.

The countries concerned are China, the Democratic People's Republic of Korea, Kazakhstan, Mongolia, the Republic of Korea and the Russian Federation.

are still missing. This is the sum of cross-border line sections which, if constructed, would provide intercountry rail connectivity. The total investment required to put in place these missing links is estimated at 75.5 billion dollars. The lack of rail intercountry connectivity is particularly acute in South-East Asia, including its links to other subregions, which accounts for 38 per cent of the missing sections in the Trans-Asian Railway network. Beyond the financing issue, a critical challenge that needs to be addressed is that each of the countries affected by the missing links should afford them the same level of priority in their respective development plans and coordinate their construction schedule.

19. Despite the above, member countries have made substantial investment in upgrading their rail infrastructure and are continuing to launch new national, bilateral or multilateral projects to improve rail connectivity as a way to provide more sustainable and balanced transport development for the region, in particular in providing access to and from landlocked countries and remote hinterland areas.

B. Providing seamless connectivity

- 20. Recognizing that intraregional and interregional connectivity remained an unfinished agenda, the Commission at its seventy-first session (May 2015) adopted resolution 71/8 on strengthening intraregional and interregional connectivity in Asia and the Pacific, requesting the secretariat to accord priority to developing comprehensive and seamless connectivity in the region. The Commission further reinforced this mandate at its seventy-second session (May 2016), when it adopted resolution 72/5 on strengthening regional cooperation on transport connectivity for sustainable development in Asia and the Pacific.
- 21. The concept of seamless connectivity conjures up the vision of an integrated transport system that allows goods and people to travel efficiently across modes and national borders. It requires policies to be coordinated, infrastructure gaps to be filled, technical standards to be harmonized, operational procedures to be synchronized, information and communications systems to be developed and deployed, and cross-border legislation to be aligned.
- 22. In this respect, as regards infrastructure developments, recent initiatives in developing the Trans-Asian Railway network are being implemented with an increasing awareness of their continuation through the territories of neighbouring countries. However, notwithstanding different financing capabilities, modernizing existing infrastructure within the framework of future corridors or constructing the missing sections in the Trans-Asian Railway network are made difficult by the fact that projects do not have the same level of priority among the countries concerned.
- 23. The Working Group has been established with the idea of being a legislative platform for policymakers of the region to discuss issues and coordinate policies supporting the development of the network. Greater use may be made of the Working Group to align national priorities with regional needs, including the planning of infrastructure and demonstration of innovative technological and operational solutions for traffic management and interoperability. It may also be used to further the expansion of the networks in particular to rural areas, discuss future directions of work

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An overview of missing links by subregion is provided in document E/ESCAP/TARN/WG(5)/4.

towards the harmonization of technical standards and identify new solutions for freight terminal operations, connection to seaports and hinterland, and "first- and last-mile" haulage.

- 24. As regards rail operation proper, the efficiency of international train operations in the network will in large part depend upon there being reasonable consistency in the technical design and operating practices of neighbouring railway systems. While this principle applies throughout the network, it is particularly crucial in situations where continuity of track gauge already exists. However, in a number of cases where this happens, there is no consistency in the length of trains operated either side of the border. This results in transit delay and cost penalties arising from the necessity to remarshall or adjust loading at the border.
- 25. Also critical is the compatibility of rolling stock, whether track-gauge continuity exists or not. Where there is continuity of track gauge, the design of braking systems prevents the exchange of rolling stock between neighbouring railways. Meanwhile, when there is no continuity of track gauge, imbalances between the loading capacity of wagons either side of the break-of-gauge point imposes similar constraints.
- 26. Increasingly, the interoperability of neighbouring rail networks, and their integration with other modes as well as with logistics providers, will depend on the deployment of new technologies such as intelligent transport systems. These systems are a combination of technologies based on the new capabilities offered by modern information and communications technology. Deployment of intelligent transport systems allows more fluid traffic flows, better management of assets, and higher levels of safety and security. They include telematics and all types of communications within rolling stock, between rolling stock and infrastructure, and between rail operators and other operational entities, including customers. Intelligent transport systems lay the foundation for creating benefits such as increased competitiveness of transport logistics, ensuring effective use of relevant resources, realizing low-carbon green transport and promoting new drivers of growth.⁵

C. Benefits of international intermodal transport corridors

- 27. Pursuant to General Assembly resolution 70/197 of 22 December 2015 entitled "Towards comprehensive cooperation among all modes of transport for promoting sustainable multimodal transit corridors", the Commission at its seventy-second session adopted resolution 72/5 on strengthening regional cooperation on transport connectivity for sustainable development in Asia and the Pacific, in which it recognized the importance of international intermodal transport corridors for safe, efficient, reliable and affordable movement of goods and people for supporting sustainable economic growth, improving the social welfare and enhancing international cooperation and trade among member States.
- 28. The Ministerial Conference on Transport held in Moscow in December 2016 echoed the terms of resolution 72/5, when it reiterated the importance of integrated intermodal transport systems for achieving sustainable transport connectivity in the region. In that regard, it underscored the importance of cooperation between countries in establishing and operationalizing intermodal transport corridors as a key element in the

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Hwang Sang-kyu and Kim Gunyoung, eds., "Chapter 6: Transport Technology", in *50 Praxes for Better Transport in Korea* (Goyang, Republic of Korea, Korea Transport Institute, 2012), p. 247.

implementation of the Regional Action Programme for Sustainable Transport Connectivity in Asia and the Pacific, phase I (2017-2021).

- 29. As Governments strive to enhance the region's economic vitality, address its mobility requirements for people and goods and bring its hinterland areas into mainstream economic development, the planning and operationalization of international intermodal transport corridors appear to offer a new approach to the delivery of regional transport projects that can minimize the environmental impact of the transport sector.
- 30. These corridors, which are primarily rail-based, incorporate different modes of transport, consider the development of adjacent land, connect industry clusters, synchronize supply chains and, most importantly, serve the lives of communities, small or large, along the way.
- 31. In a regional context, corridors encourage the joint planning of initiatives based on a shared vision of development. They focus on the entire transportation needs along a wide strip of land and permit greater rationalization of investment. International intermodal corridors also create "network effects" that allow countries with more limited funding capabilities to implement projects that they could not envisage on their own. In the process, these countries also gain access to technologies and technical know-how.
- 32. The corridor approach for the integration and coordination of different transport modes is essential to the region's economic integration, in particular for landlocked countries and remote hinterland areas. It allows countries to identify projects of common interest, thereby aligning national initiatives with regional priorities. It also facilitates a phased harmonization of design standards and operating principles and serves as a catalyst for the introduction of new technologies such as intelligent transport systems.
- 33. Experiences in the region show that the concept of international intermodal transport corridors is now well accepted across the region and related projects are being implemented or studied. One of the most inclusive frameworks for such corridors to be developed is the Belt and Road Initiative put in place by the Government of China to instil new forces in realizing economic integration through enhanced intercountry connectivity. In recent years, in collaboration with a range of international partners including train operators and logistics companies, the railways of China have launched a number of new intermodal services to demonstrate the potential of such corridors.
- 34. Since 2010, a weekly service has been carrying automotive parts for BMW from the manufacturer's Leipzig site in Germany to its assembly plant in Shenyang, China. In 2014 and 2015, other ventures were tested with the launch of services between Chongqing (China) and Duisburg (Germany), Zhengzhou (China) and Hamburg (Germany), Suzhou (China) and Warsaw, Yiwu (China) and Madrid, and Kunming (China) and Rotterdam (Netherlands). Most recently, in early 2016, a first container train travelled from Zhejiang province in China to Tehran through Kazakhstan and Turkmenistan.
- 35. In general, with transit times that are much shorter than those offered by maritime shipping and transport costs that are well below those of air freight, these services are popular with industries shipping time-sensitive, expensive cargo such as automotive parts or information technology products. However, challenges remain in a number of operational and commercial

areas. Interfaces between transport operators can be further improved, as can communication between partners and achievement of agreed targets.

36. To be successful in their planning, design and operationalization, corridors require substantial coordination. Given the multilateral nature of international intermodal corridors, this coordination can be driven mainly through ad hoc agreements at the governmental level as no other entities could realistically muster the necessary power of negotiation. Such agreements would facilitate the articulation of a clear vision with clearly stated goals and objectives through dialogue and consensus. It would also guarantee that projects move forward at a similar pace in all the countries concerned.

IV. Trans-Asian Railway network and port infrastructure development

- 37. While the development of land transport infrastructure networks has topped the transport agenda of policymakers of the region, connectivity-related activities to link these networks with archipelagic and Pacific island countries have been afforded similar priority. Developing these links is essential to confer on land transport networks the full operational function through which they can provide broader benefits to all the countries in the region by creating the conditions for greater connectivity between faraway markets.
- 38. One example is maritime transport with onward land movements through the Asian Highway and Trans-Asian Railway between Japan and mainland Asia. Goods collected anywhere in Japan are routinely loaded into containers at the ports of Tokyo, Nagoya, Osaka or Hakata and taken to Shanghai (China) by sea where they are transferred to rail or road for further carriage to inland places of China or Central Asia. Shipments to and from the Republic of Korea follow similar routing patterns. A most recent example occurred in early 2017, when 32 containers were sent from Zhaltyr railway station in Kazakhstan to Viet Nam via the ports of Lianyungang (China) and Ho Chi Minh City (Viet Nam).
- 39. This shows that the use of efficient international land transport linkages such as those offered by the Trans-Asian Railway network need not be limited to continental Asia but can also be extended to archipelagic and island countries, and used to create market openings between subregions that have hitherto not been traditional trading partners. However, for this to happen, efficient port infrastructure and maritime services must be developed and, most importantly, adequate interfaces between rail transport and maritime shipping must be established in ports of the region.
- 40. At the moment, very few, if any, ports of the region have a layout that is compatible with the efficient operation of trains, in particular container trains. In this respect, two major impediments need to be addressed: rail loading and unloading tracks must be of sufficient length to accommodate full-length trains, and they must be located close to berth-side container stacks to allow single-lift loading and unloading operations using port handling equipment, such as portal cranes or reach stackers. In their current design, most ports, far from encouraging a modal shift from road to rail, actually reinforce the predominant use of road transport for inbound and outbound movements. This feature delays the emergence of fuel-efficient, environmentally friendly and cost-effective rail-based international intermodal corridors in support of the 2030 Agenda.

41. The above is mainly due to the fact that port infrastructure is too often designed and developed with the sole idea of accommodating maritime vessels. Yet, as gateways to land transport networks, ports should also be developed as an essential component of any policy that aims to enhance access to hinterland areas through intermodal corridors. In this respect, their future design should pay increased attention to interfaces with land transport modes, in particular railways.

V. Issues for consideration

42. The Working Group is invited to review the present document and consider policies and approaches for: (a) promoting investment in the Trans-Asian Railway, including intermodal facilities; (b) creating the conditions for using the routes of the Trans-Asian Railway as a basis for the development of international intermodal corridors; (c) promoting greater integration of rail operation and maritime shipping through the provision of adequate infrastructure in ports; and (d) how best to approach the deployment of modern information and communications technologies to enhance the efficiency of rail operation across the Trans-Asian Railway network.

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Annex

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

Legislative meeting

Decisions and recommendations

Commission, seventy-second session, Bangkok, 15 to 19 May 2016

- The Commission stressed the importance of effective regional transport connectivity with unhindered access to seaports through the removal of obstructions at border crossings and requested the secretariat to continue providing assistance on knowledge-sharing and capacity-building to promote the delivery of effective regional transport connectivity.^a
- The Commission recognized that regional integration and economic development required efficient transport networks, and that efficient transport connectivity was important for the future economic development of the Asia-Pacific region.^b
- The Commission also recognized that transport was a core instrument in achieving the Sustainable Development Goals and, accordingly, transport systems needed to be aligned with the Sustainable Development Goals to provide access to the market, reduce transport costs and achieve sustainable growth, notably for landlocked and small island developing countries.^c
- The Commission stressed the importance of integrated intermodal/multimodal transport systems that fully utilized the comparative advantages of different modes of transport in order to ensure safe, efficient, economical, competitive, socially inclusive and environmentally sound transport infrastructure and services as a means to achieving sustainable development.
- The Commission noted the requests to the secretariat to continue its assistance to members and associate members in the areas of: (a) development of regional transport networks with an emphasis on comprehensive infrastructure planning for multimodal transport and logistics; (b) development of regional and interregional transport corridors; (c) harmonization of multilateral and bilateral transport agreements and regulations; (d) simplification of cross-border documents and formalities; (e) reduction of transportation costs for landlocked countries.^e
- At its 6th plenary meeting, on 19 May, the Commission adopted resolution 72/5 on strengthening regional cooperation on transport connectivity for sustainable development in Asia and the Pacific.

Ministerial Conference on Transport, third session, Moscow, 5 to 9 December 2016

- The Conference reiterated the importance of integrated intermodal transport systems for achieving sustainable transport connectivity in the region. In that regard, it underscored the importance of cooperation between countries in establishing and operationalizing intermodal transport corridors as a key element in the implementation of the Regional Action Programme for Sustainable Transport Connectivity in Asia and the Pacific, phase I (2017-2021).^g
- The Conference recommended, in the implementation of the Regional Action Programme, that priority should be accorded to: (a) comprehensive corridor plans and connections between national transport infrastructure development plans; (b) harmonization of construction standards, technical norms of transport means, transport policies and regulations on the basis of the Intergovernmental Agreement on the Asian Highway Network, the

Legislative meeting

Decisions and recommendations

Intergovernmental Agreement on the Trans-Asian Railway Network and the Intergovernmental Agreement on Dry Ports; and (c) development of multilateral transport facilitation agreements suitable to the region and connections between bilateral and subregional transport facilitation agreements.^h

- The Conference noted with satisfaction that many member countries had accorded priority to the development of the Asian Highway network, the Trans-Asian Railway network and the network of dry ports to improve national and regional connectivity. It acknowledged the ongoing work of the secretariat in the fields of standard setting and promoting innovative new technologies for further development of the Asian Highway network, the Trans-Asian Railway network and the network of dry ports of international importance.
- ^a E/ESCAP/72/34, para. 10.
- ^b E/ESCAP/72/34, para. 65.
- ^c E/ESCAP/72/34, para. 66.
- d E/ESCAP/72/34, para. 67.
- ^e E/ESCAP/72/34, para. 74.
- ^f E/ESCAP/72/34, para. 80.
- g E/ESCAP/MCT(3)/12, para. 6.
- ^h E/ESCAP/MCT(3)/12, para. 7.
- ⁱ E/ESCAP/MCT(3)/12, para. 8.