Economic Commission for Europe
Inland Transport Committee

Eighty-fourth session
Geneva, 22-25 February 2022
Item 9 (c) of the provisional agenda
Strategic questions of a horizontal and cross-sectoral
policy or regulatory nature:
Challenges and emerging trends of inland transport in
different regions (statements by delegates)

Overview of COVID-19-related inland transport recovery
trends and challenges in different regions and strategic
considerations on global supply chains resilience

Note by the Secretariat*

**Mandate and Summary**

This document is prepared in line with the ITC Strategy until 2030 (ECE/TRANS/288/Add.2) and the role the Committee plays as the United Nations Platform for regional, interregional and global inland transport policy dialogues, by providing a platform to review emerging challenges in inland transport at its annual session. It has been prepared by the ECE secretariat to facilitate discussion and contributions from delegations.

This document contains an overview of COVID-19-related inland transport recovery trends and challenges in different regions and strategic considerations on global supply chains resilience. Its key conclusions are:

- Despite a return to economic growth in 2021, inland transport systems have not yet reached the goal of restoring the resilience of supply chains and transport systems to external shocks;
- A rise of continued disruptions for the transport industry, especially road transport operations, and supply of critical industry components, led to a continued disruption of global supply chains, undermining global recovery efforts;
- These disruptions create a vicious cycle which may lead to increased support for medium to longer-term shifts in global production in order to shorten supply chains, as a part of company and government-level risk-management strategies in the face of continued disruptions. These tendencies, in turn, risk reversing development gains since the 1990s and the achievement of the Sustainable Development Goals;

* The present document was submitted late due to resources constraints.
Restoring global supply chain resilience is therefore not only an end in itself but also a means to a higher end of accomplishing the Sustainable Development Agenda. The Inland Transport Committee and its subsidiary bodies have a major role to play, through the continued development and digitalization of the existing regulatory framework and through facilitating the development of international contingency management strategies and plans.

I. Introduction

1. During much of 2020 and throughout 2021, countries have been tasked with the dual challenge of fighting the pandemic, while boosting economic growth and development. In this uphill battle, global supply chains have been – and will remain – a critical component for the success of these efforts.

2. The first part of this paper lays out the stakes for inland transport and the resilience and robustness of global supply chains both as an end in themselves and as a means for sustainable development. Subsequent sections will outline the global and regional trends vis-à-vis the dual challenge. To do that, this paper provides an overview of regional economic and epidemiological trends, as well as a broad overview of modal responses and trends. The concluding parts will discuss the role of the Inland Transport Committee (ITC) and its subsidiary bodies in supporting regional and global efforts to restore supply chain resilience of inland transport supply chains.

II. Restoring global supply chain resilience: high stakes for global development

3. Globalization which started in the 1990s was built on the obvious advantages of an open international division of labour in multi-country production that compelled countries to cooperate and maintain trade openness under normal times. The role of the three pillars of international transport – aviation, maritime and inland transport – has proven a critical component that has led to the rise of global value chains.

4. The COVID-19 pandemic is not the first shock or crisis to have raised concern of the resilience and robustness of global supply chains over the past 50 years. The frequency and intensity of shocks, due in particular to extreme weather events, has increased in recent times. Geographically diversified production structures contribute to the resilience of economies during crises if supply interruptions in one country can be replaced by imports from other countries.

5. The COVID-19 shock was different and its impacts more catalytic due to its global scope (both geographically and sector-wise) and its duration. The COVID-19 pandemic has exposed, among other things, the fragility of global supply chains. Due to its prolonged duration and uncertainty, it creates the potential of reversing long-term accomplishments with detrimental effects for access to global markets that have contributed to lifting billions out of poverty.

---

1 When allocating countries to their regional commissions, it is important to note that many countries are members of more than one regional commission. In some cases, these countries have a clear geographical link to one regional commission and are thus assigned to this one only. In addition to this, though, there are two principal areas where the regional Commissions overlap: in North Africa/Western Asia (countries involved: Algeria, Egypt, Libya, Mauritania, Morocco, Sudan, Tunisia) and Central Asia (Azerbaijan, Kazakhstan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan, Uzbekistan). In these two cases, the countries have been included under the analysis of both regional commissions.

2 Resilience is understood as the ability of a system to recover quickly after an external shock. Robustness is understood as the ability of a system to resist change without adapting its initial stable configuration.
6. This paper distinguishes between two different phases. The first phase consists of initial responses in 2020 that led to an unprecedented contraction of the global economy and shortages of critical products. During this first phase, the global economy operated under conditions of emergency national and international responses, due to the COVID-19 pandemic.

7. Inland transport was one of the critical areas affected. The transport sector heavily impacted and was heavily affected by national and international responses to the pandemic. In this sense, it is worth noting that the direct value added by the transport sector to global gross domestic product (GDP) is about 3–5 per cent, and transport typically provides 5–8 per cent of average national total paid employment.

8. A study of early national responses to the COVID-19 pandemic shows that, in order to contain the spread of the virus, governments around the world constrained access through their borders to non-essential traffic for both freight and passenger flows. They did so by either closing them completely or imposing restrictions that ranged from visa issuance bans or mandatory health certificates to extended periods of quarantine, social distancing, contact-tracing and other measures (see ECE/TRANS/2021/13).

9. These measures were invariably taken under emergency response status, thus overriding existing “standard” procedures, protocols and mechanisms. They were also taken in uncoordinated ways between the various governments, thus rendering them less effective and even more harmful, both epidemiologically and economically.

10. As a result, images of countless lines of thousands of trucks stuck at borders around the world have been recorded, symbolizing the beginning of a vicious cycle that started with uncoordinated national responses and culminated with delaying the delivery of essential goods, such as foods and medical supplies, and undermining global efforts for a swift and sustained recovery from the pandemic. For an overview of inland transport responses to COVID-19 by region see ECE/TRANS/2021/13.

11. Furthermore, according to the WTO, 90 counties invoked more than 220 temporary measures to restrict exports.

12. The second phase, which in effect covered the entirety of 2021, consists of a global economic and trade bounce back which was however characterised by systemic bottlenecks that led, in turn, to increased inflationary pressures and shortages of strategic critical products and components. During this period, both the resilience and robustness of supply chains were compromised. The rest of this paper discusses the second phase trends and impacts.

III. Global economic growth and development in times of uncertainty and continued pandemic waves

13. Epidemilogically, the number of confirmed cases worldwide in 2021 was about nine times that of 2020, but the hospitalization rate, severe illness rate, and mortality rate are gradually decreasing, with the deepening of the clinical and epidemiological understanding of the coronavirus. Moreover, all regions/countries have affirmed the critical role of vaccination in preventing the further spread of the coronavirus.

14. Economically, the global economy overall experienced a strong recovery in 2021, albeit with a good deal of uncertainty due to new waves of COVID-19 infections, persistent labour market challenges, lingering supply-chain challenges and rising inflationary pressures. After a 3.5 per cent fall in 2020, world output expanded by between 5.3 (UNCTAD 2021) and 5.53 per cent in 2021, partially recovering the ground lost in 2020. However, considering the average annual global growth rate of 3 per cent in 2017–2019, world income will still be 3.7 per cent below where its pre-pandemic trend would have put it by 2022.4 Merchandise trade bounced back, with global trade in goods exceeding the pre-pandemic level but with
several bottlenecks in supply chains and uncertainties about the future continuation of the trend. Rising inflationary pressures in many economies are posing additional risks to continued recovery.

15. By December 2021, uneven access to vaccines around the world persisted. Vaccine doses per 100 people in the least developed countries stood at just 23.9 against 147.4 in the developed countries. Limited supplies of vaccines from manufacturers and domestic fiscal constraints continue to limit access for many developing countries (WESP 2022).

16. Rising inflationary pressures globally, partly triggered by shortcomings in supply chain performance and accessibility to critical components, present additional risks to recovery. Global headline inflation rose to an estimated 5.2 per cent in 2021, more than 2 percentage points above its trend rate in the past 10 years (WESP 2022). A faster-than-expected tightening of global monetary conditions represents another major challenge.

17. As such, the transport sector heavily impacted and was heavily affected by national and international responses to the pandemic. Available evidence suggests that epidemiological and economic impacts were very different between and within different regions.

18. This picture of patchy recovery and rising challenges inevitably means that the implementation of the Sustainable Development Agenda is impacted heavily. This is especially true when considering that inland transport is an essential requirement for the economic and social development of all countries, as well as for enabling regional and global cooperation and economic production and distribution of goods.

19. These underlying factors make it all the more important to identify COVID-19-related challenges and emerging trends impacted by and affecting inland transport in different regions. To do that, this document provides an overview of regional economic and epidemiological trends. It also provides a broad overview of transport modal responses and trends. Finally, the document discusses strategic issues on the role of supply chains in supporting the achievement of the Sustainable Development Goals and the role of the Committee.

IV. Economic performance and epidemiological trends by region

A. The Economic Commission for Africa (ECA) region

Economic performance

20. In the ECA region, aggregate GDP is estimated to have grown at a pace of 3.8 per cent in 2021 (WESP 2022). The pandemic brought an unprecedented recession, which wiped out years of development gains. As a result, current estimates predict that the regional GDP per capita will not return, even in the best-case scenario, to its pre-pandemic level before 2024. The recovery of international trade in the ECA region is vital. In the third quarter of 2021, the region’s total exports increased by 40 per cent compared with the same period in 2020 and increased by 22 per cent compared with the same period in 2019. The recovery of goods imports in the ECA region was slightly lower than exports. The total import volume increased by 31 per cent compared with the same period in 2020 and 21 per cent compared with the same period in 2019. South Africa’s recovery pattern follows the same trends as the region. The exports of goods in the third quarter of 2021 increased by 40 per cent compared with the pre-pandemic average, while imports of goods also increased slightly by 9 per cent.

Epidemiological situation

21. The ECA region faces a cumulative incidence rate of 1,859 cases per 100,000 population, which is far below the global rate (6,339 cases per 100,000 population). Yet, the case fatality (1.51 per cent) ranks the second highest globally. It is worth noticing that the

continent has the lowest vaccinated rate (20.71 per cent) and the lowest fully vaccinated rate (15.69 per cent) globally, suggesting the severe concern on the equity of the global vaccination distribution.

B. The ECE Region

Economic performance

United States of America

22. In the United States of America, rapid growth in domestic demand faced increasing supply-side constraints due to global supply-chain disruptions and logistics backlogs, particularly the shortage of industrial inputs, including semiconductors. Recovery has largely depended on domestic demand; external demand has been weak. Resulting inflationary pressures that can be expected to persist in 2022 given continued supply chain challenges, may worsen if a new wave of infection takes hold. Uncertainties over the COVID-19 pandemic, mounting inflationary pressures and associated monetary policy decisions impact economic prospects. Thus growth is forecast to decelerate to 3.5 per cent in 2022, from a robust 5.5 per cent in 2021.

European Union

23. The European Union countries faced serious challenges in the second half of 2021, due to supply-chain disruptions and shortages of workers. The automotive industry, crucially important for several European Union countries, had to scale back production due to semiconductor shortages. Nevertheless, the economy of the European Union returned to growth in 2021, followed by an increase of exports, particularly to China and the United States of America. Following a 6 per cent contraction in 2020, the region’s GDP grew by an estimated 4.7 per cent in 2021 (WESP 2022). This improved economic performance in 2021 was also marked by the reintroduction of containment measures due to a surge of COVID-19 cases (Omicron variant) and increased inflation in the second half of the year.

24. The European Union’s international trade in the third quarter of 2021 has returned to pre-pandemic levels. Compared with the 2019 average, the European Union’s imports of goods rose by 16 per cent and exports by 9 per cent, although compared to the second quarter of 2021, exports of goods fell slightly by two percentage points.

Russian Federation

25. The Russian Federation’s exports and imports of goods continued to grow strongly. Compared to the 2019 average, the value of imports of goods in the Russian Federation in the third quarter of 2021 rose by 21 per cent, and exports rose by 32 per cent. Compared with the first two quarters of 2021, the international trade volume of the Russian Federation is also steadily increasing.\(^6\)

Commonwealth of Independent States, Georgia and South-eastern Europe

26. Economic growth resumed also in the CIS area in 2021 as mobility and activity restrictions were eased or removed, domestic demand strengthened and the external environment became more favourable, including through sharp increases in commodity prices. The aggregate GDP of the CIS and Georgia, after shrinking by 2.6 per cent in 2020, expanded by an estimated 4.3 per cent in 2021 (WESP 2022), followed by significant increases of inflation in some CIS countries. Economic recovery was heavily impacted by supply disruptions and higher food and energy prices.

Epidemiological situation

27. The ECE region faces the highest cumulative incidence rate of 12,605 cases per 100,000 population among all the United Nations regions. This is approximately two times the global cumulative incidence rate of 6,339 cases per 100,000. However, the case fatality rate of the infection cases in the ECE region is below the global average rate (1.45 per cent), despite the highest absolute cumulative deaths of 183 cases per 100,000 population, which can be attributed to the much larger fully vaccinated population with the immunization coverage of 56.02 per cent in ECE region than any other United Nations regions.

C. The Economic Commission for Latin America (ECLAC) region

Economic performance

28. Although the region faced the heaviest losses globally due to COVID-19 in 2020, the ECLAC region’s economy rebounded from the COVID-19 crisis: after contracting by a record 7.4 per cent in 2020 (WESP 2022), the region’s GDP grew by an estimated 6.5 per cent in 2021. However, the pandemic may leave lasting scars on the region’s economies, including higher unemployment and poverty, greater inequality and larger debt burdens.

29. The reduction in tourism and remittances from the United States of America pushed Central America (ex-Mexico) and the Caribbean into a deep recession in 2020, with double-digit GDP contractions in many island economies. In contrast, assuming vaccination accelerates and most of the restrictions on international traveling come down, the region tends to recover fast by the end of 2021 and return to its pre-pandemic growth trend in 2022.

30. The trade rebound in the ECLAC region is strong. Compared with the third quarter of 2020, the total import value of goods in the region has increased by half, and the total export value has increased by 43 per cent. Compared with the same period in 2019, the total import value has increased by 23 per cent, and the total export value has increased by 26 per cent.

Epidemiological situation

31. The ECLAC region has a cumulative incidence rate of 7,752 cases per 100,000 population, which is the second highest in the world, following the cumulative incidence rate in the ECE region. However, the region currently has the highest case fatality rate of 1.81 per cent, above the world average. The percentage of fully vaccinated is 51.07 per cent.

D. The Economic and Social Commission for Asia and the Pacific (ESCAP) region

Economic performance

32. In the third quarter of 2021, Asia’s exports rose by a quarter compared to the pre-pandemic period, while imports increased by 21 per cent. Overall international trade steadily resumed growth. The Pacific countries’ exports in the third quarter of 2021 increased by 47 per cent year-on-year compared to 2020 and 29 per cent year-on-year compared to 2019, while imports increased by only 18 per cent and 14 per cent compared to 2020 and 2019. 8

Epidemiological situation

33. The ESCAP region faces a cumulative incidence rate of 3,101 cases per 100,000 population, which is significantly lower than the global rate (6,339 cases per 100,000 population). However, the region’s case fatality rate (1.36 per cent) is relatively high. Furthermore, the region has a relatively high fully vaccinated rate of 49.62 per cent.

---

E. The Economic and Social Commission for West Asia (ESCWA) region

Economic performance

34. The region’s GDP grew by an estimated 4.7 per cent in 2021 after contracting by 3.4 per cent in 2020 (WESP 2022). Compared with the same period in 2020, The ESCWA has seen a significant rebound in international trade volume. In the third quarter of 2021, total imports of goods increased by 34 per cent year-on-year, and total exports increased by 42 per cent year-on-year. However, it will still take some time to return to the pre-pandemic average stability. At present, the import and export volumes of goods have increased by 18 per cent and 19 per cent year-on-year compared with 2019. 9 This is mainly affected by the decline in oil prices and demand. Estimated by the UNCTAD, as the rebound in global demand, a gradual uptick in international oil prices and production helps to boost economic activity in the ESCWA region. 10

Epidemiological situation

35. The ESCWA region faces a cumulative incidence rate of 5,095 cases per 100,000 population. This is below the global rate (6,339 cases per 100,000 population). The number of infections and deaths remained relatively low in the region, and the case fatality rate of 1.11 per cent is the lowest among all the United Nations regions. However, the fully vaccinated rate of the region is relatively backward, only 31.09 per cent.

V. Overview of impacts on transport by modes and responses

36. Underlying the above regional trends are sectoral transport trends and responses. Road transport companies and workers’ have been affected disproportionately albeit in different ways during the second year of the pandemic, compared to the first one. Dramatic increases in demand, ongoing COVID-19 restrictions, driver shortages and drastic fuel price increases have created a set of conditions that further aggravated supply chain disruptions. As a result, labour concerns, rising fuel prices and pandemic restrictions in the sector, driver turnover and bankruptcies further destabilized transport systems and aggravated supply chain disruptions.

37. The impacts on rail transport were more mixed globally and regionally. Compared to road transport, rail experienced relatively less disruption even at the peak of the first phase of the pandemic. Where trucks were caught in traffic jams, railway was able to transport large quantities contact-free, even over long distances, thanks to the significantly smaller workforce required and the stable routes. Since trains need fewer customs procedures and coronavirus tests, the railways have not experienced traffic jams at the borders. Of course, the pandemic left its mark on freight operating companies due to impacts on industry, which led to lower demand due to lower volume of, for example, the automotive and steel industries.

38. Inland water transport was severely impacted by the COVID-19 outbreak, which resulted in a drastic reduction of cargo volumes transported by inland water transport, especially in the March–June 2020 period. Passenger traffic and the movement of vessel crews, including the replacement of crew members, where more severely hindered. The renewal of vessel certificates and certificates of crew members was also significantly affected. Due to the disruptions in supply chains, some ports and inland terminals faced a build-up of empty containers, which led to yard congestion and disruption of daily operations.

39. In terms of the maritime supply chain, the maritime trade growth had already been weak in 2019 at 0.5 per cent, but in 2020 it declined by 3.8 per cent, and the total volume dropped to 10.65 billion tons, reduced by 422 million. In 2020, developing countries, including the economies in transition of Asia, accounted for 60 per cent of global goods loaded (exports) and 70 per cent of goods discharged (imports). Much of this growth has

---

been in East Asia, especially China, and there has also been a surge in volumes on the transpacific containerized trade route linking East Asia to North America. A smaller proportion of trade was in developed countries, which generated 40 per cent of global maritime exports (goods loaded) and 31 per cent of imports (goods discharged). Latin America and Africa maintained smaller shares.\(^{11}\)

40. As the demand fell due to COVID-19, one of the maritime transport carriers’ responses was to reduce supply by cancelling services. Blank sailing has increased significantly. These capacity reductions by the major carriers have managed to avoid price reductions for container shipping services, but the high debt level of the container carriers still creates insolvency risks. Moreover, the price of freight shipping has a dramatic increase despite the reduction in container shipping volume. Especially in September 2021, the price reached a new high of over USD 10,900. It is because container shipping, due to its complexity and transcontinental nature, has been severely disrupted by the COVID-19 pandemic through various events, such as port closures, port congestions, shortages of labour, as well as a lack of new shipping containers. Besides, imports from Asia to the United States of America increased by about 40 percent in 2021 compared to 2019, while the volume of exports stayed roughly the same. As a result of all these factors, carriers have not been able to utilize their capacity and meet the demand fully – that increased only slightly compared to 2019 – for container shipping, which has driven freight rates to record levels. Another factor related is the increase in fuel cost during the pandemic.

41. In terms of the aviation supply chain, the international air travel and air cargo has been severely interrupted, which is even worse than the inland transport, due to the border shutdown and quarantine requirement to the international passengers. In April 2020, international air travel almost stopped and air cargo shipments were only at 20 per cent of what they were the year before. The air cargo is less affected by COVID-19 than the air travel, while the international air travel remained virtually grounded during the pandemic. However, since there is still a great part of air freight that relies on the belly cargo of passenger flights, though the fluctuated growth rate of freighter capacity keeps positive, the total cargo capacity growth remains negative since 2020.

42. However, the air cargo has played a significant role in the on-time delivery for high-value goods because of the pandemic-induced logjams in maritime transport. The sudden rush for medical appliances and PPE at the onset of the pandemic and the subsequent rise of e-commerce, have further supported this subsector. In this context, cash-strapped airlines have converted passenger planes to cargo carriers as they looked for alternatives to limit their financial losses. This switch led to a year-on-year increase in cargo revenues by 50 percent during the first quarter of 2021, though it was insufficient to compensate for the sharp loss in passenger flows, which resulted in a 65 per cent drop in overall revenues.\(^{12}\) As the figure shown below, the total revenue of cargo airlines is estimated to have a recovery even during the COVID-19 pandemic.

VI. Policy responses and the critical role of strengthened supply chain resilience

43. Due to a large part to major disruptions in supply chains discussed earlier in this paper, calls for geographically more diversified production chains and for more local production have intensified as security of supply concerns have assumed new importance relative to efficiency and cost considerations. In terms of projection, according to UNCTAD the COVID-19 pandemic will likely redirect companies’ focus on increasing the resilience of their supply chains by shortening supply chains, in order to reduce the risk of supply chain disruptions and increase self-sufficiency.\(^{13}\) UNCTAD also predicts that re-shoring and near-
shoring will gradually increase. UNCTAD\textsuperscript{14} reports that global flows of foreign direct investment in 2020 fell by one third to $1 trillion, well below the low point reached after the global financial crisis a decade ago, have been severely affected by the COVID-19 pandemic. Investments in industry and new infrastructure investment projects in developing countries were hit especially hard.

44. If these early signs confirm longer-term shifts in the global division of labour in manufacturing, the risk is that in the medium to long-term, in order to ensure supply of critical goods and services, governments may opt for production strategies that involve re-shoring or back-shoring as a preferred risk-management strategy. These strategies may in turn impact the achievement of critical sustainable development goals, including poverty reduction around the world. After all, since the early 1990s, the driving force that pulled billions out of poverty was the rise of global value chains, that allowed disadvantaged regions to partake in a global distribution of production and reap development gains in a sustained way. This development milestone is now put into question.

45. Thus, it becomes evident that restoring supply chain resilience and robustness is not only an end in itself, for example to the transport industry, operators and labour. It is also a means to a higher end, which is ensuring that development gains around the world are not reversed.

VII. The role of United Nations inland transport conventions and the international regulatory system in strengthening inland transport resiliency in a global pandemic setting

46. The Inland Transport Committee (ITC) during its eighty-third (25-28 February 2020) and eighty-fourth (23-26 February 2021) plenary sessions took a leadership role in helping build consensus on the important role of transport in leading global recovery from the pandemic and strengthening resilience against future crises, among others by endorsing a Ministerial Resolution entitled “Enhancing resilient inland transport connectivity in emergency situations: an urgent call for concerted action” (ECE/TRANS/304, Annex I).

47. In the face of the pandemic, the Committee and its subsidiary bodies continued the development and implementation of a new generation of legal instruments supporting the digitalization/computerization of transport and border-crossing procedures, and the deployment of existing mechanisms and networks in order to accelerate the post-COVID-19 economic recovery of contracting parties to support Member States’ efforts for a sustainable recovery. These measures included the leveraging and acceleration of digitalization/computerization of existing legal instruments on transport and border-crossing procedures, such as eTIR and eCMR. The acceleration of eTIR International System development and its promotion as the tool that ensures paperless, seamless and contactless border crossing operations while keeping the borders open and keeping drivers and customs officers protected from the virus was welcomed by TIR contracting parties. So far, 16 Contracting parties have officially requested connection to eTIR International System.

48. Furthermore, building on the network of Member States/contracting parties and key transport stakeholders established by the underlying legal instruments, the subprogramme developed the “Observatory on Border Crossings Status due to COVID-19”, a platform that provides updated information on the current status of 174 United Nations Member States including the national practices and measures implemented in response to the pandemic.

49. The following United Nations Conventions under the purview of the ITC are of possible significance for their contracting parties in the management of pandemics and cross-border emergencies (ECE/TRANS/2021/4):

\begin{itemize}
\item International Convention on Harmonization of Frontier Controls of Goods (of 1982)
\item Customs Convention on the International Transport of Goods under Cover of TIR Carnets (of 1975)
\end{itemize}

\textsuperscript{14} UNCTAD (2021), \textit{World Investment Report 2021 - Investing in sustainable recovery}, United Nations
• Convention on the Contract for the International Carriage of Goods by Road (CMR) and its Additional Protocol to the CMR concerning the Electronic Consignment Note (eCMR)

50. The Inland Transport Committee, as the parent body of Working Parties with a modal intermodal focus, as well as responsible for border-crossing facilitation (SC.1, SC.2, SC.3, WP.5, WP.24 and WP.30), is uniquely positioned to promote the discussion of international contingency management as an instrument to increase resilience of inland transport systems to external shocks (see ECE/TRANS/2022/19).